Figure 1a

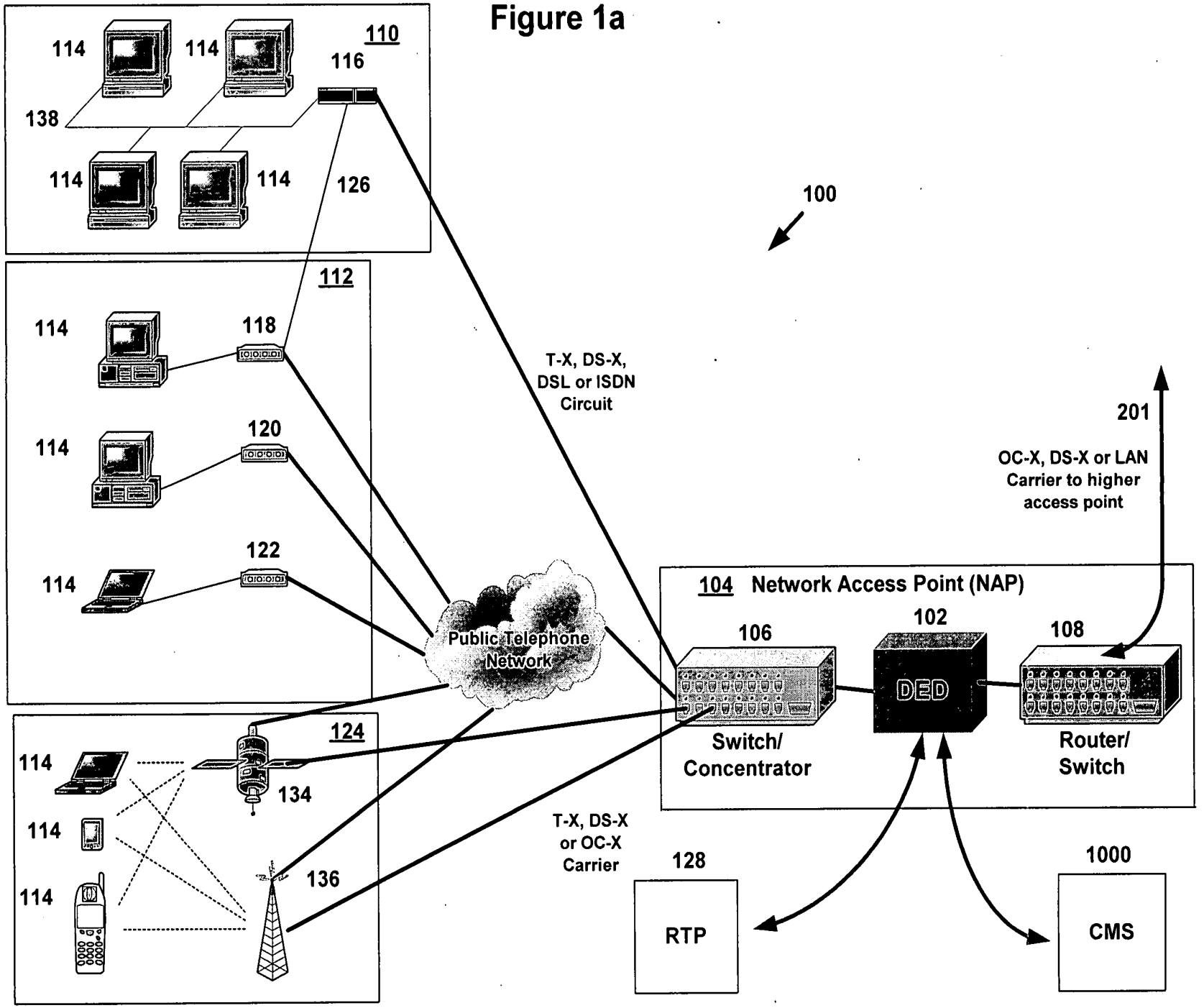

110
114
114
116
138
114
114
126
100
112
114
118
T-X, DS-X,
DSL or ISDN
Circuit
201
OC-X, DS-X or LAN
Carrier to higher
access point
114
120
114
122
104 Network Access Point (NAP)
Public Telephone
Network
106
102
108
DED
Switch/
Concentrator
Router/
Switch
124
114
134
114
T-X, DS-X
or OC-X
Carrier
128
1000
136
114
RTP
CMS

Figure 1b. Regional Transaction Processor

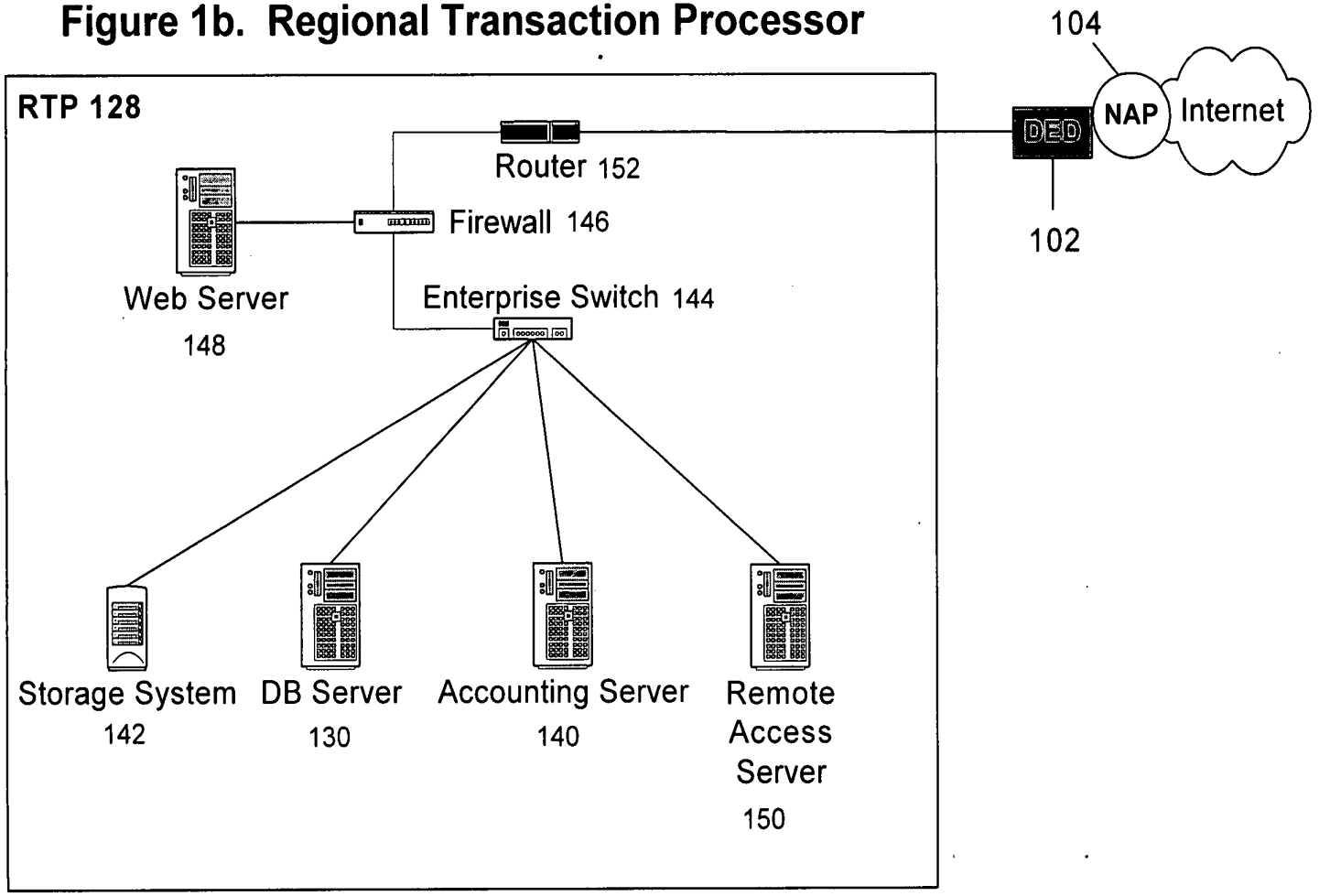


Figure 1c. Content Matching Server

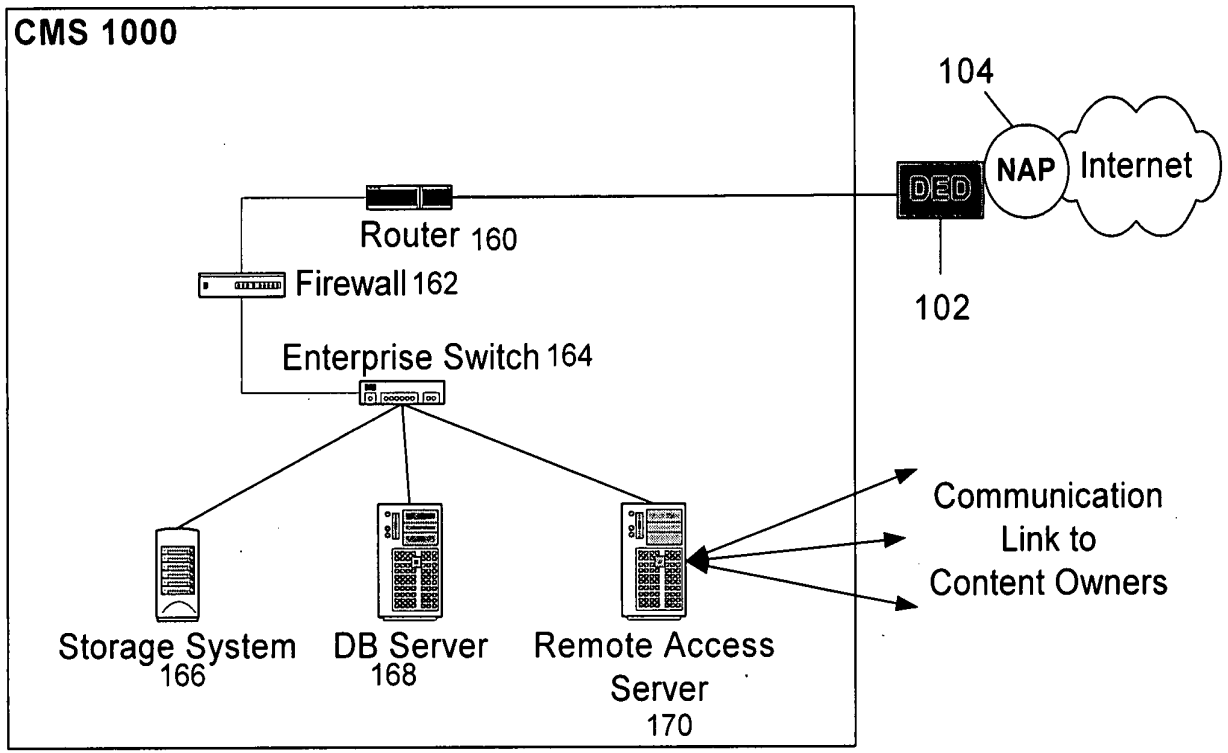


Figure 1d. Central Storage and Backup Systems

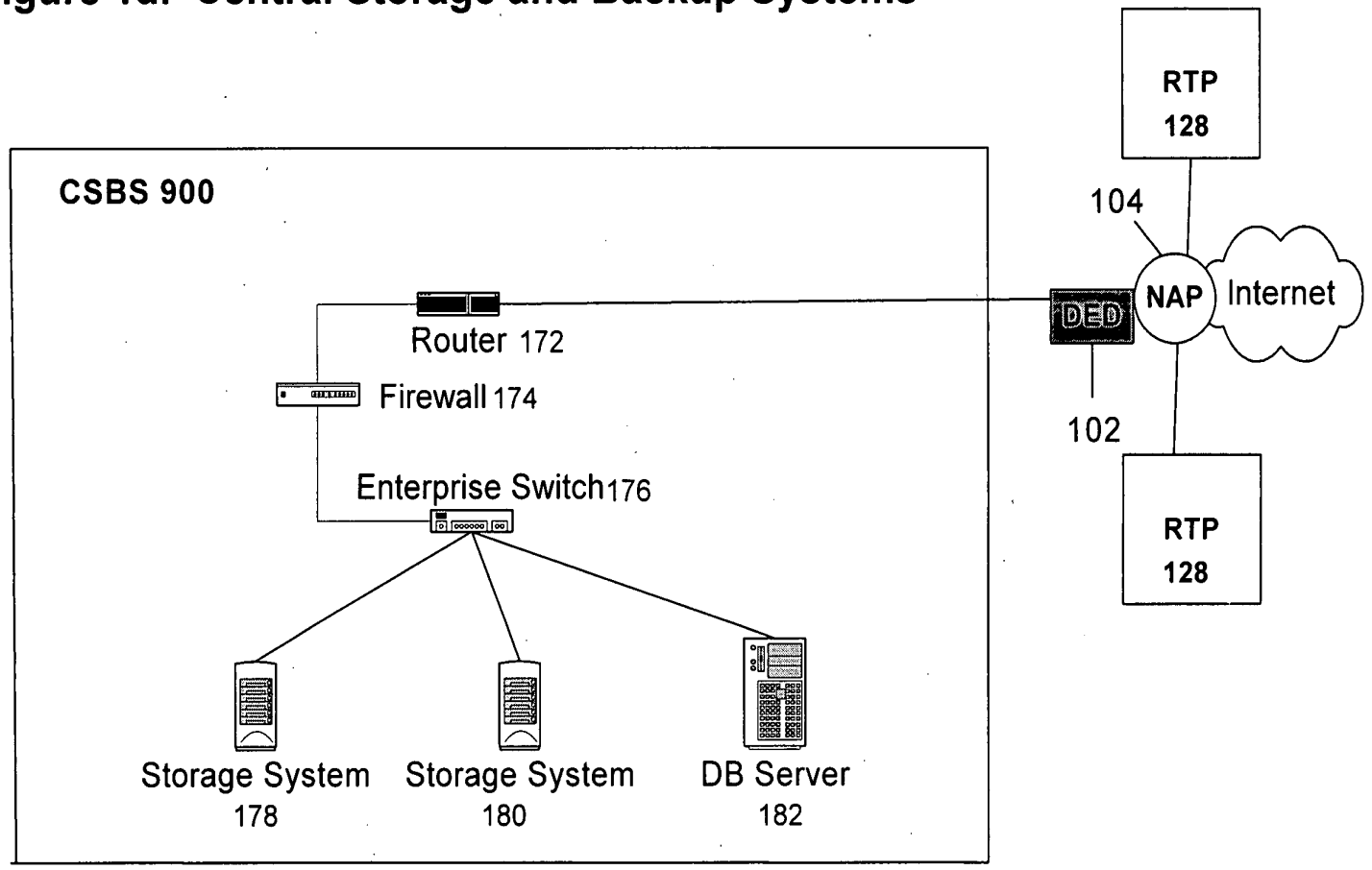


Figure 1e.

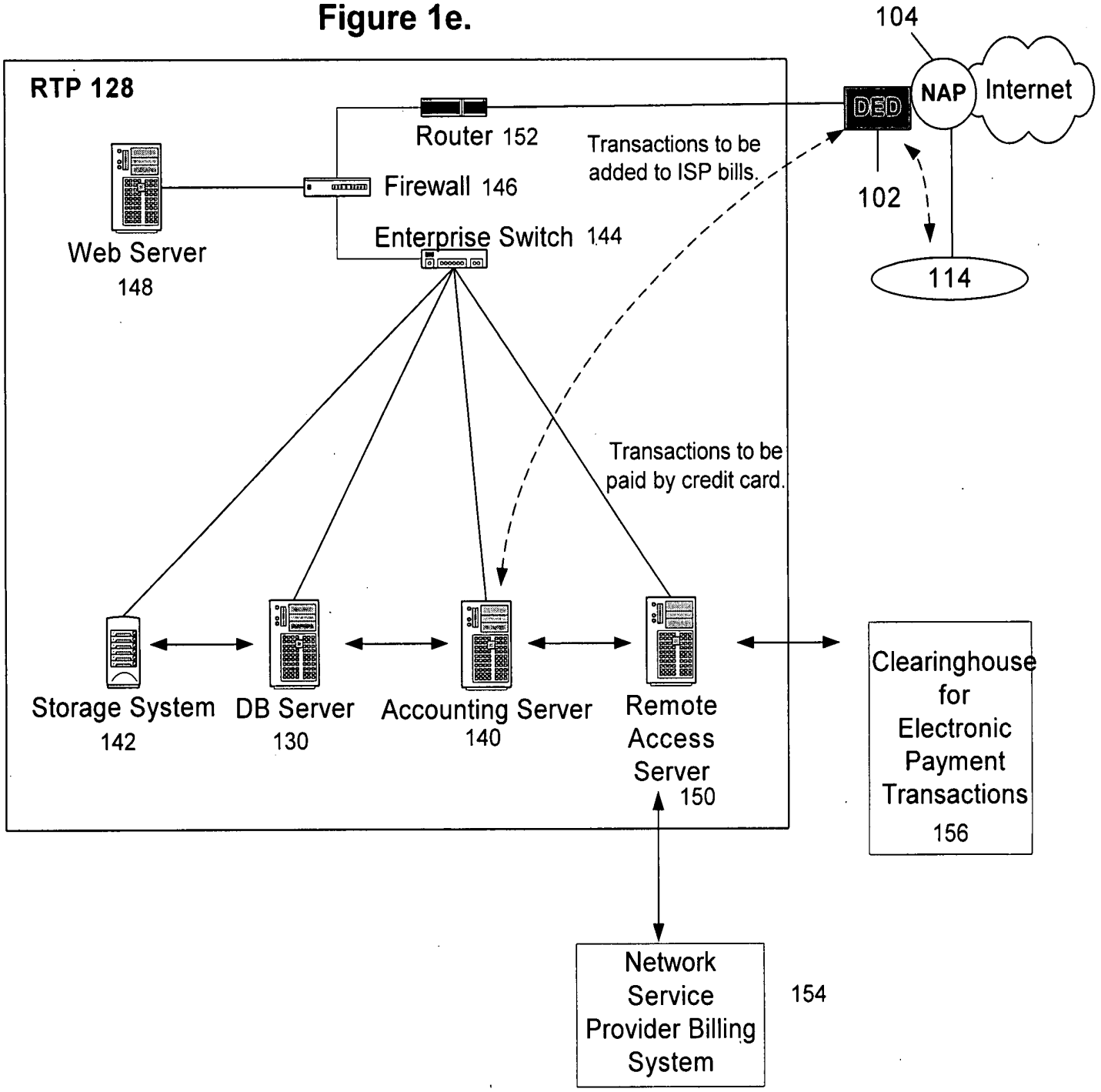
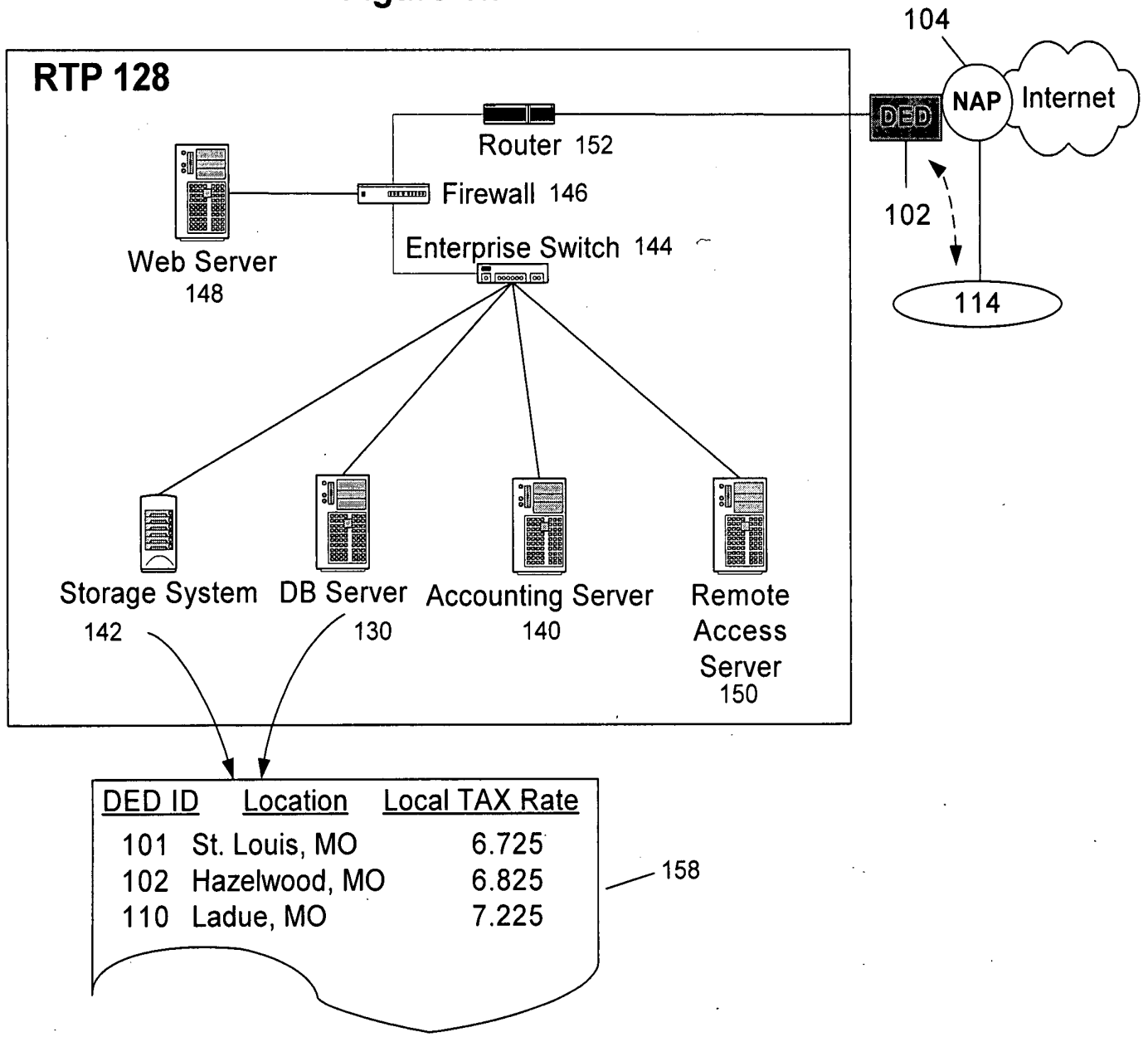

104
RTP 128
DED
NAP
Internet
Router 152
Transactions to be added to ISP bills.
Firewall 146
102
Web Server 148
Enterprise Switch 144
114
Transactions to be paid by credit card.
Storage System 142
DB Server 130
Accounting Server 140
Remote Access Server 150
Clearinghouse for Electronic Payment Transactions 156
Network Service Provider Billing System
154

Figure 1f.


104
RTP 128
DED
NAP
Internet
Router 152
Firewall 146
Web Server
148
Enterprise Switch 144
102
114
Storage System
142
DB Server
130
Accounting Server
140
Remote
Access
Server
150
DED ID Location Local TAX Rate
101 St. Louis, MO 6.725
102 Hazelwood, MO 6.825
110 Ladue, MO 7.225
158

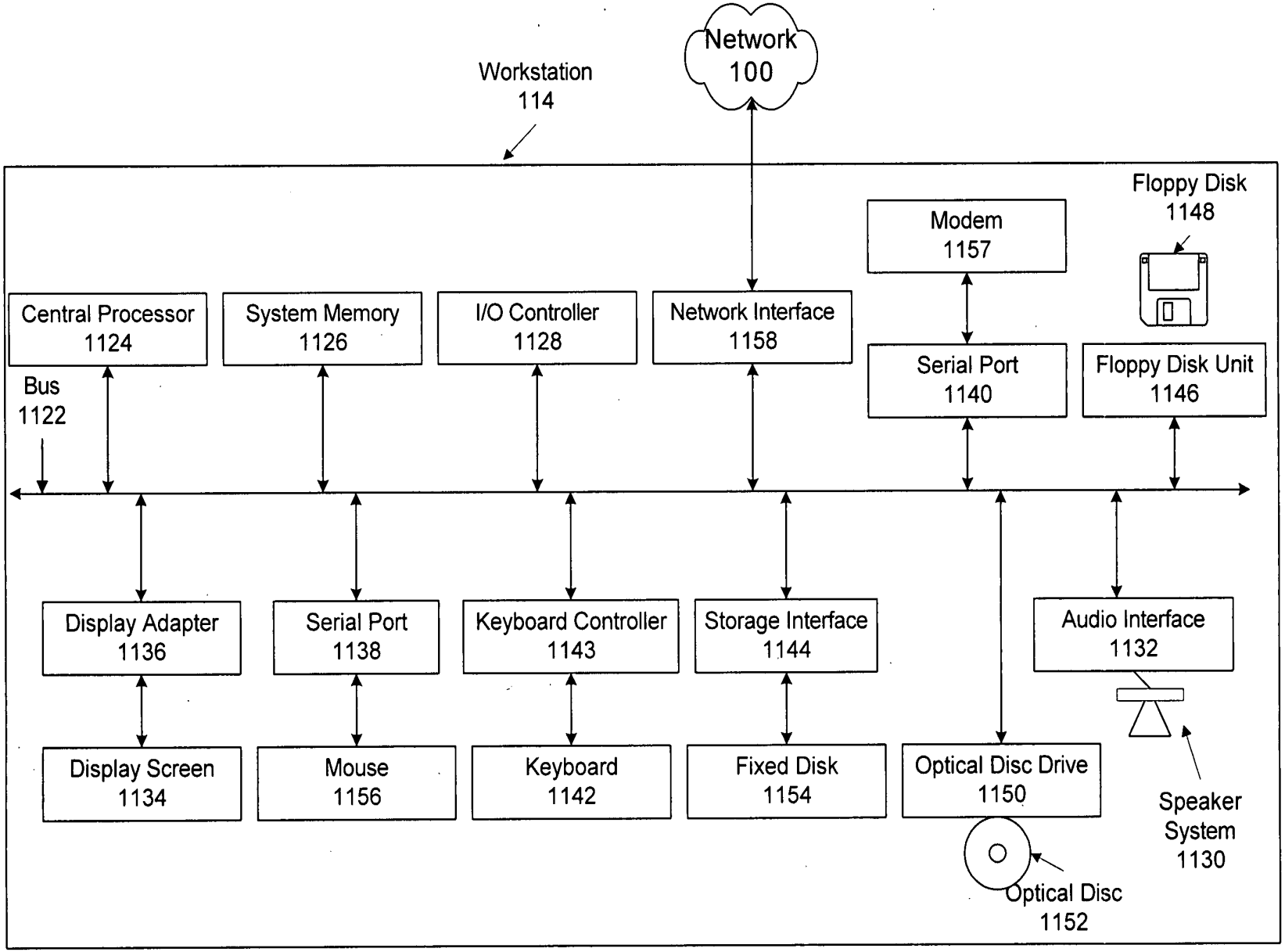

Network
100
Workstation
114
Floppy Disk
1148
Modem
1157
Central Processor
1124
System Memory
1126
I/O Controller
1128
Network Interface
1158
Serial Port
1140
Floppy Disk Unit
1146
Bus
1122
Display Adapter
1136
Serial Port
1138
Keyboard Controller
1143
Storage Interface
1144
Audio Interface
1132
Display Screen
1134
Mouse
1156
Keyboard
1142
Fixed Disk
1154
Optical Disc Drive
1150
Speaker
System
1130
Optical Disc
1152

Figure 1g

Figure 2a

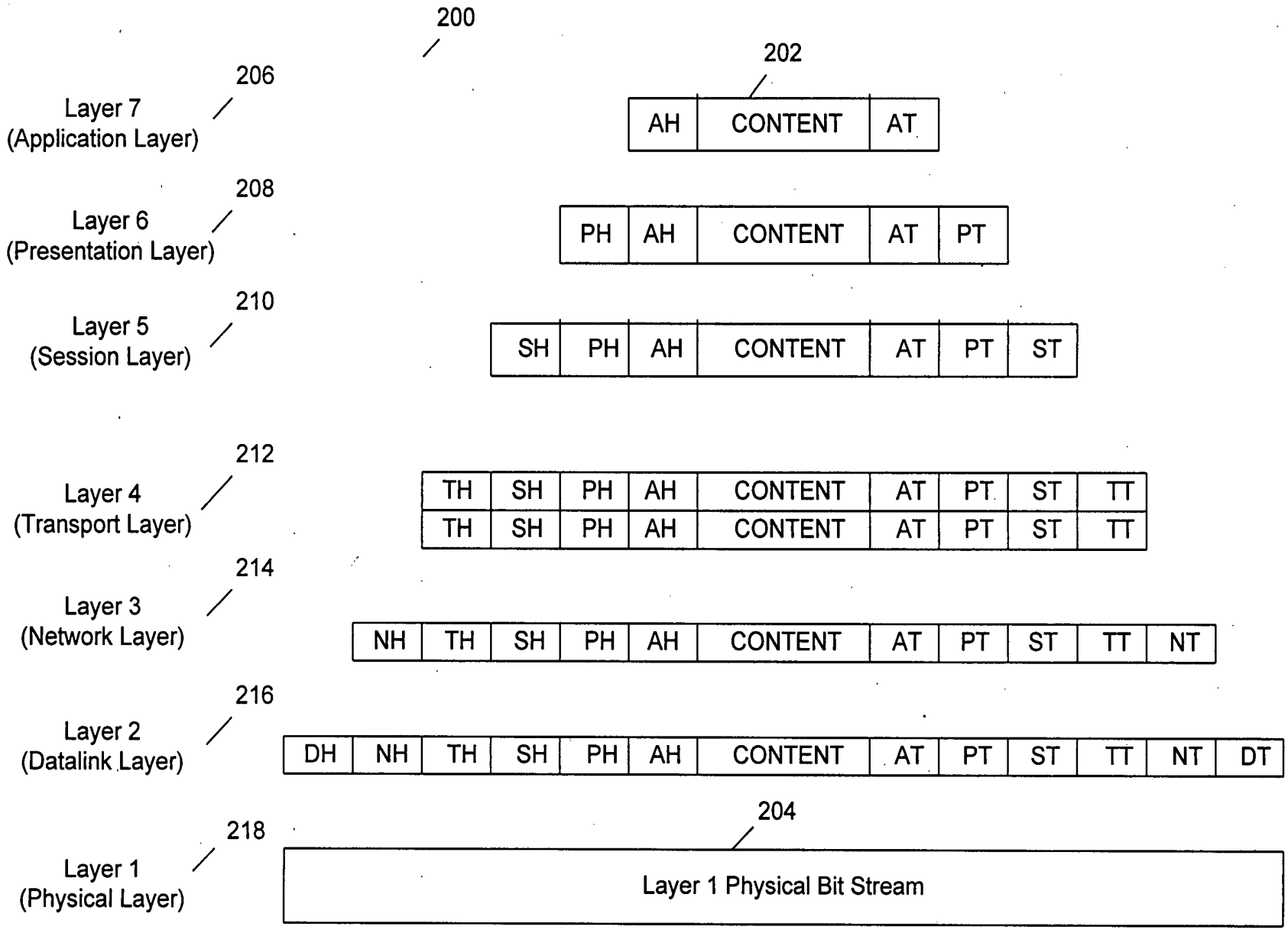
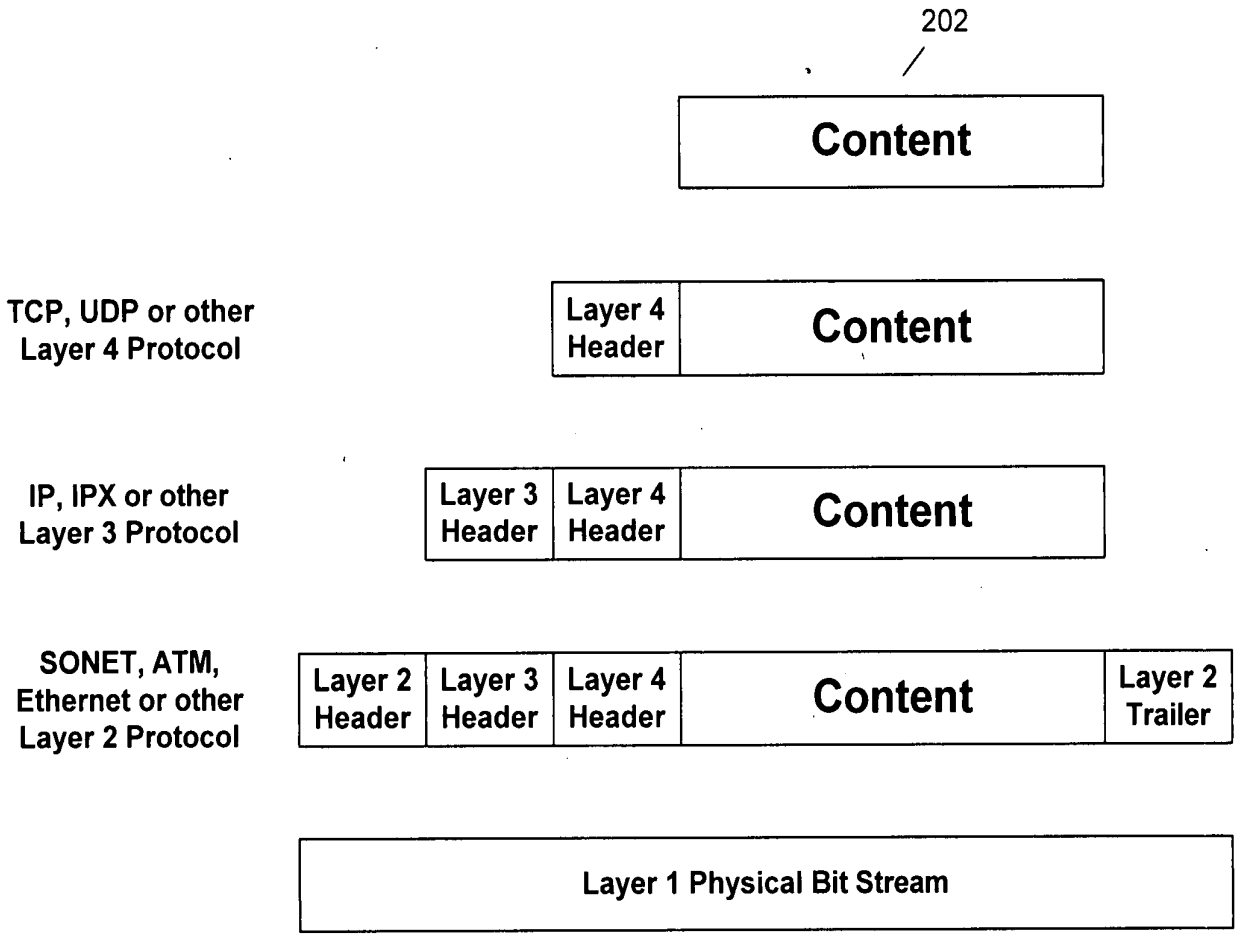

200
202
206
Layer 7
(Application Layer)
AH
CONTENT
AT
208
Layer 6
(Presentation Layer)
PH
AH
CONTENT
AT
PT
210
Layer 5
(Session Layer)
SH
PH
AH
CONTENT
AT
PT
ST
212
Layer 4
(Transport Layer)
TH
SH
PH
AH
CONTENT
AT
PT
ST
TT
TH
SH
PH
AH
CONTENT
AT
PT
ST
TT
214
Layer 3
(Network Layer)
NH
TH
SH
PH
AH
CONTENT
AT
PT
ST
TT
NT
216
Layer 2
(Datalink Layer)
DH
NH
TH
SH
PH
AH
CONTENT
AT
PT
ST
TT
NT
DT
204
218
Layer 1
(Physical Layer)
Layer 1 Physical Bit Stream

Figure 2b. Layered Data Encapsulation Process



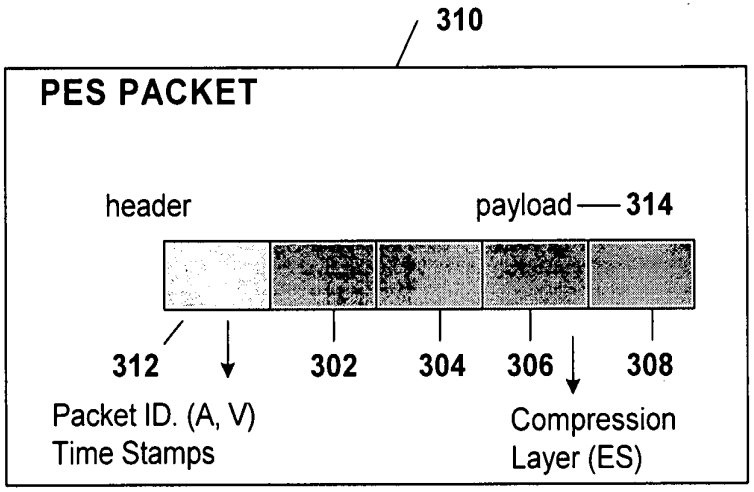

310
PES PACKET
header
payload
314
312
302
304
306
308
Packet ID. (A, V)
Time Stamps
Compression
Layer (ES)

Fig. 3a

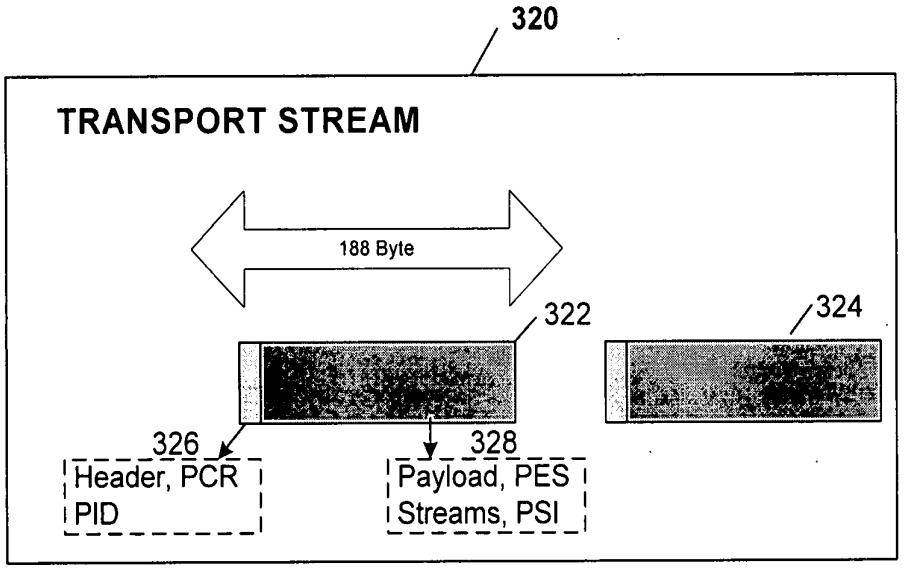

320
TRANSPORT STREAM
188 Byte
322
324
326
328
Header, PCR
PID
Payload, PES
Streams, PSI

Fig. 3b

Figure 4a

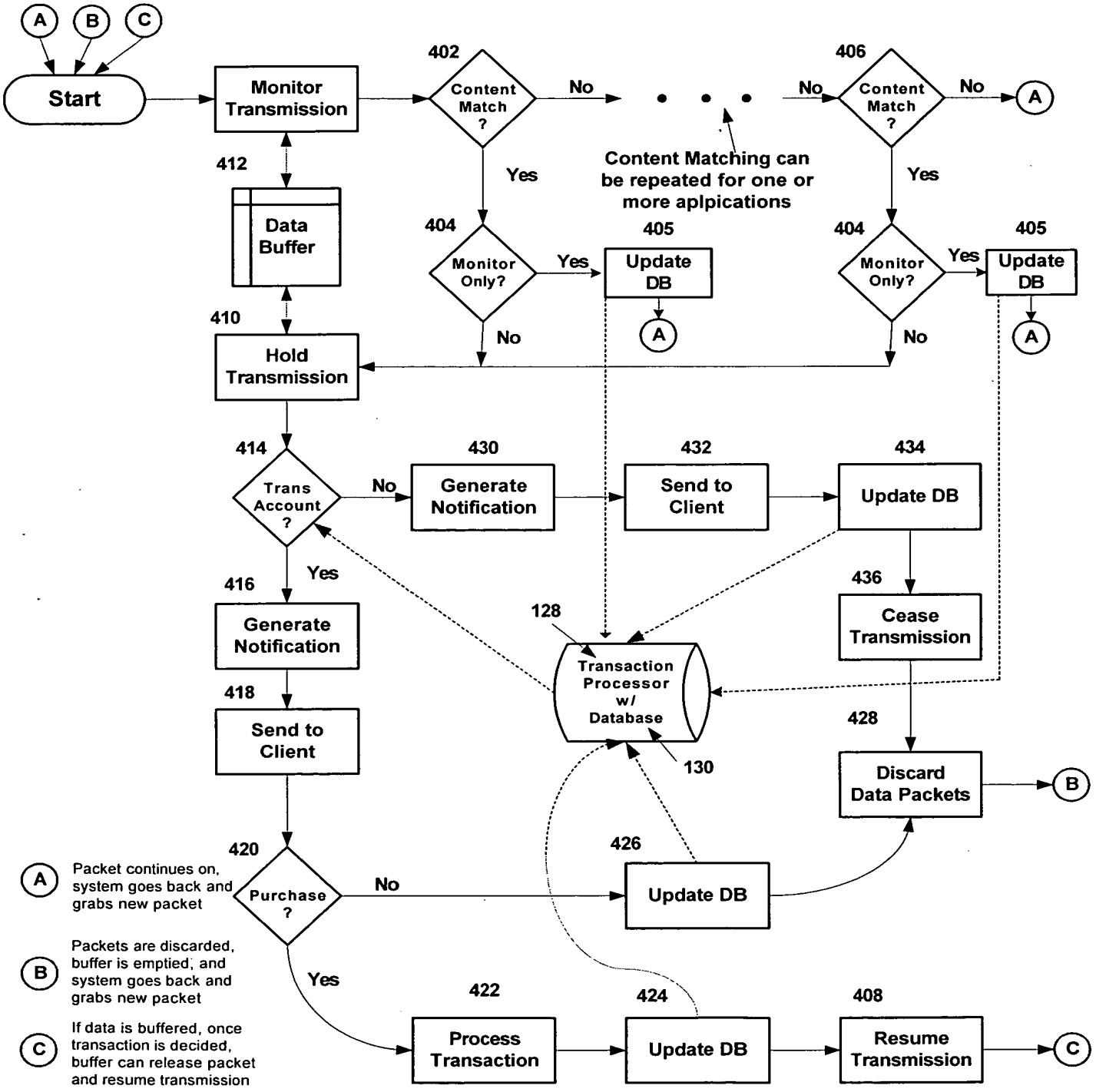

A
B
C
Start
Monitor Transmission
402
Content Match ?
No
Yes
406
Content Match ?
No
No
A
Content Matching can be repeated for one or more aplpications
412
Data Buffer
404
Monitor Only?
Yes
405
Update DB
A
404
Monitor Only?
Yes
405
Update DB
A
No
No
410
Hold Transmission
414
Trans Account ?
No
430
Generate Notification
432
Send to Client
434
Update DB
Yes
416
Generate Notification
128
Transaction Processor w/ Database
130
436
Cease Transmission
418
Send to Client
428
Discard Data Packets
B
420
Purchase ?
No
426
Update DB
Yes
422
Process Transaction
424
Update DB
408
Resume Transmission
C
A
Packet continues on, system goes back and grabs new packet
B
Packets are discarded, buffer is emptied, and system goes back and grabs new packet
C
If data is buffered, once transaction is decided, buffer can release packet and resume transmission

Figure 4b

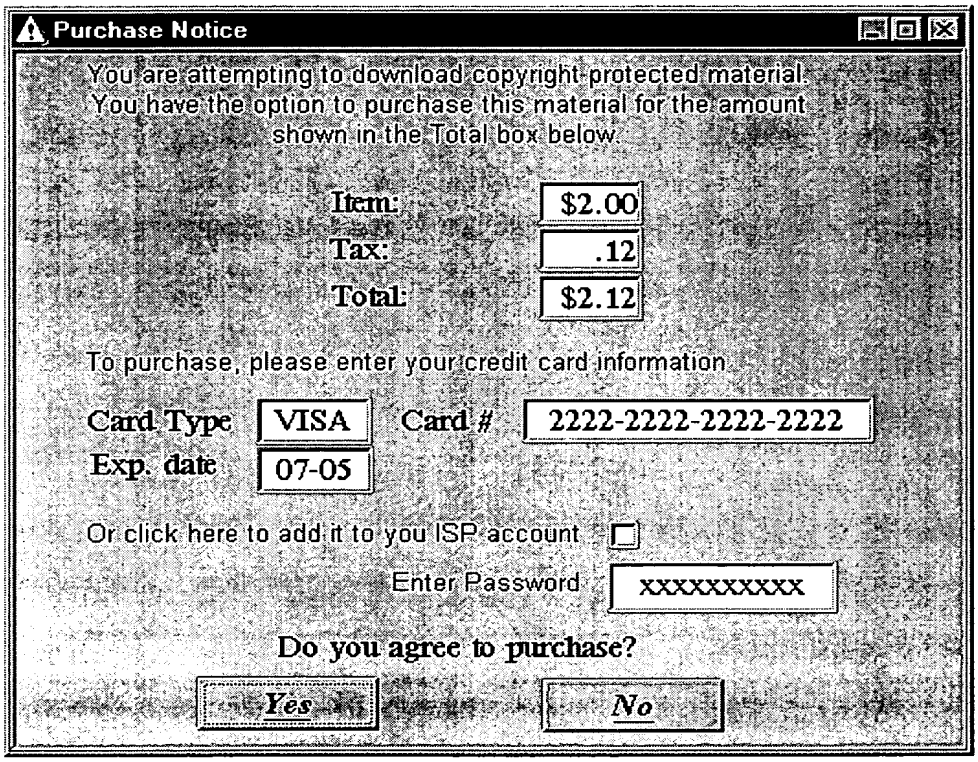

Purchase Notice
You are attempting to download copyright-protected material.
You have the option to purchase this material for the amount shown in the Total box below.
Item:
$2.00
Tax:
.12
Total:
$2.12
To purchase, please enter your credit card information
Card Type
VISA
Card #
2222-2222-2222-2222
Exp. date
07-05
Or click here to add it to you ISP account
Enter Password
xxxxxxxxxx
Do you agree to purchase?
Yes
No

Figure 4c

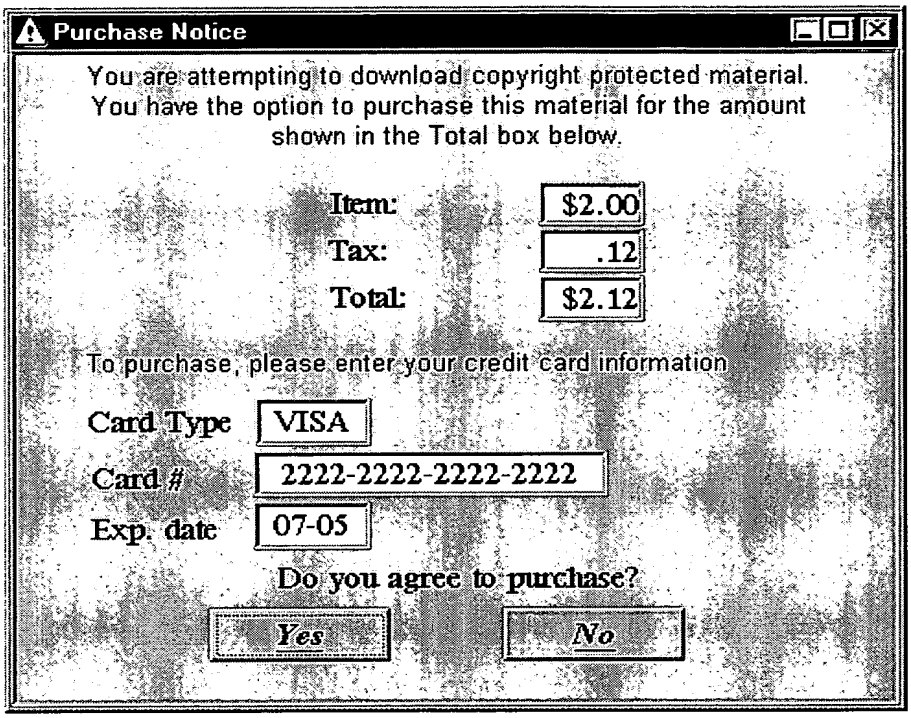

Purchase Notice
You are attempting to download copyright protected material.
You have the option to purchase this material for the amount
shown in the Total box below.
Item:
$2.00
Tax:
.12
Total:
$2.12
To purchase, please enter your credit card information
Card Type
VISA
Card #
2222-2222-2222-2222
Exp. date
07-05
Do you agree to purchase?
Yes
No

Figure 4d

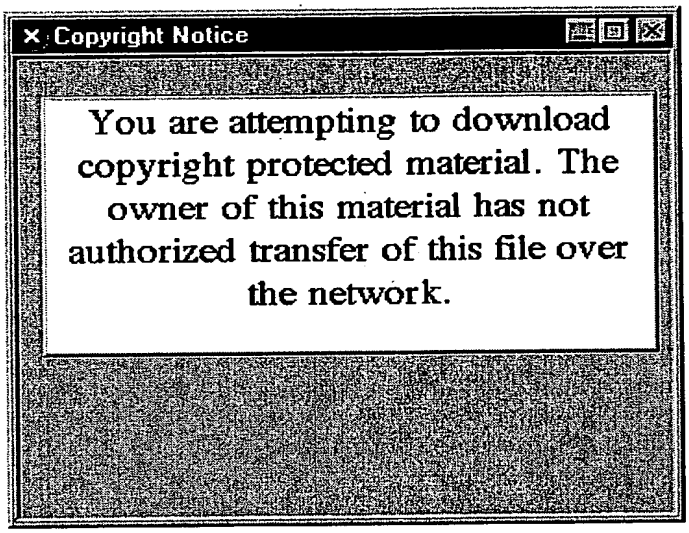

Copyright Notice
You are attempting to download copyright protected material. The owner of this material has not authorized transfer of this file over the network.

Figure 4e

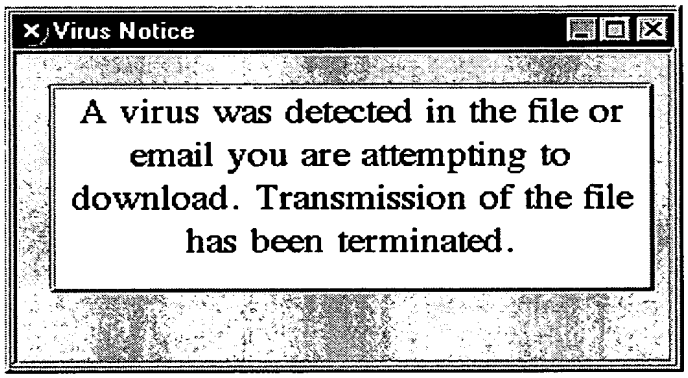


Figure 4f

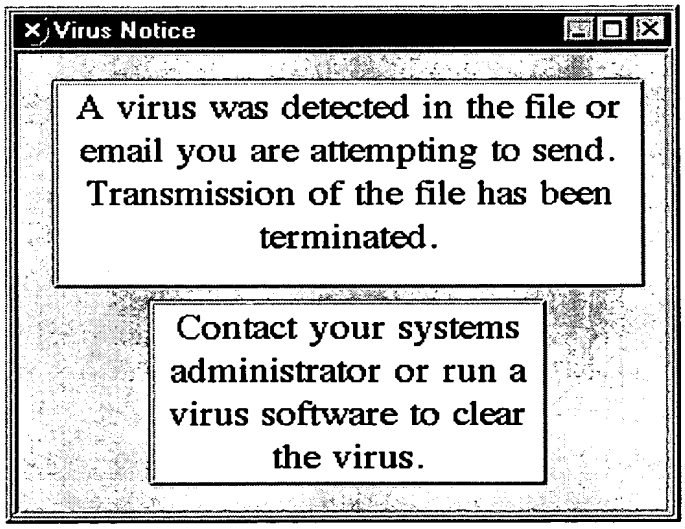


Figure 4g

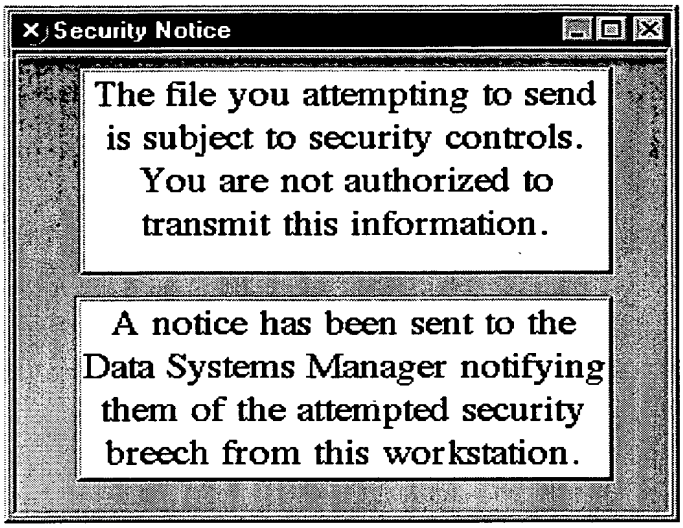


Figure 4h

Figure 4i

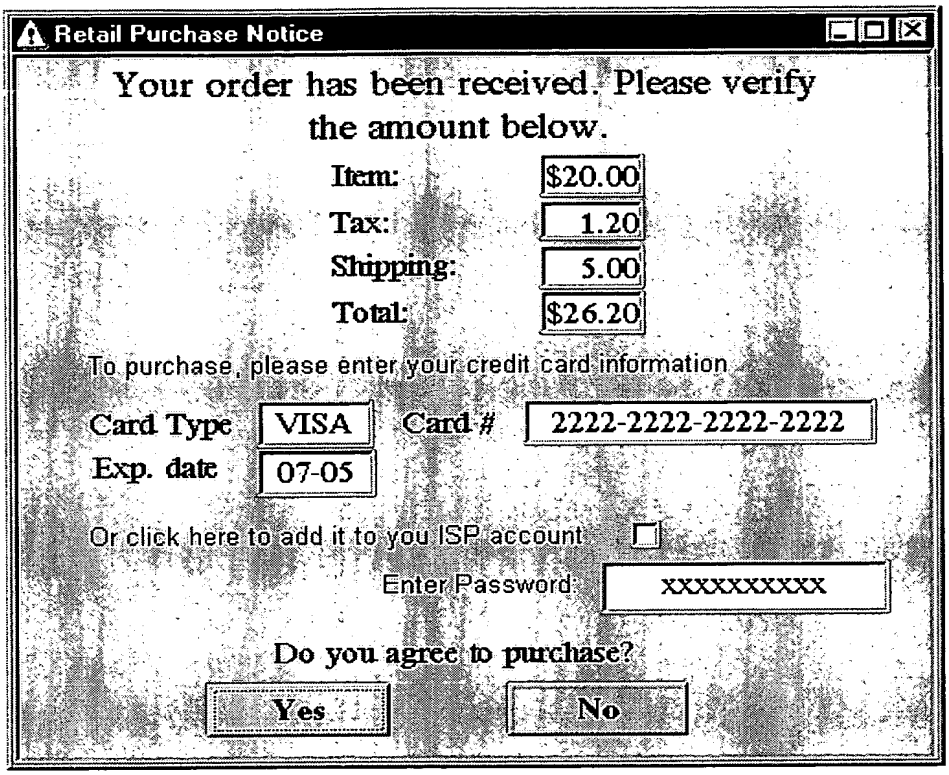

Retail Purchase Notice
Your order has been received. Please verify the amount below.
Item: $20.00
Tax: 1.20
Shipping: 5.00
Total: $26.20
To purchase, please enter your credit card information
Card Type VISA
Card # 2222-2222-2222-2222
Exp. date 07-05
Or click here to add it to you ISP account
Enter Password: xxxxxxxxxx
Do you agree to purchase?
Yes
No

Figure 5a

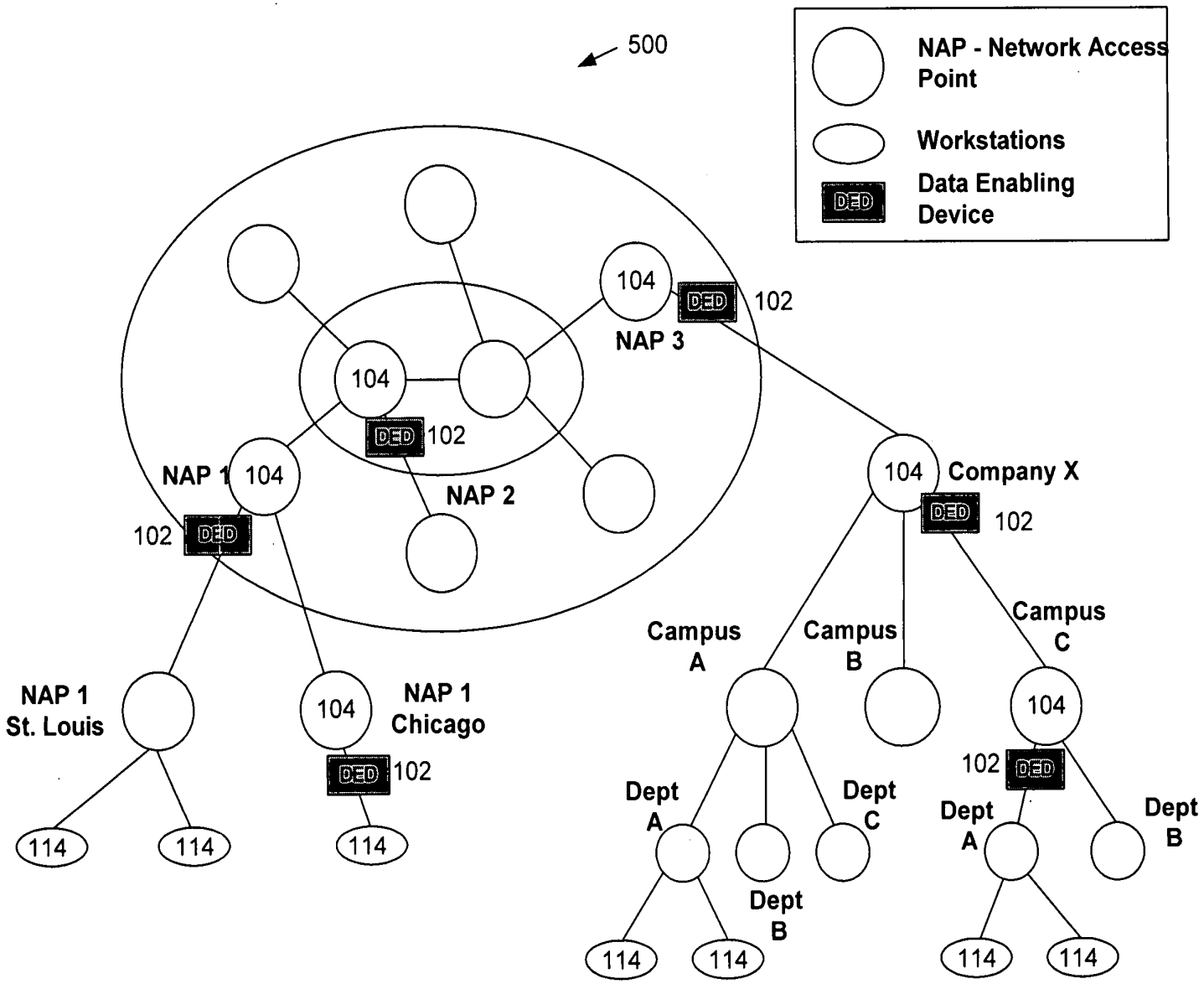
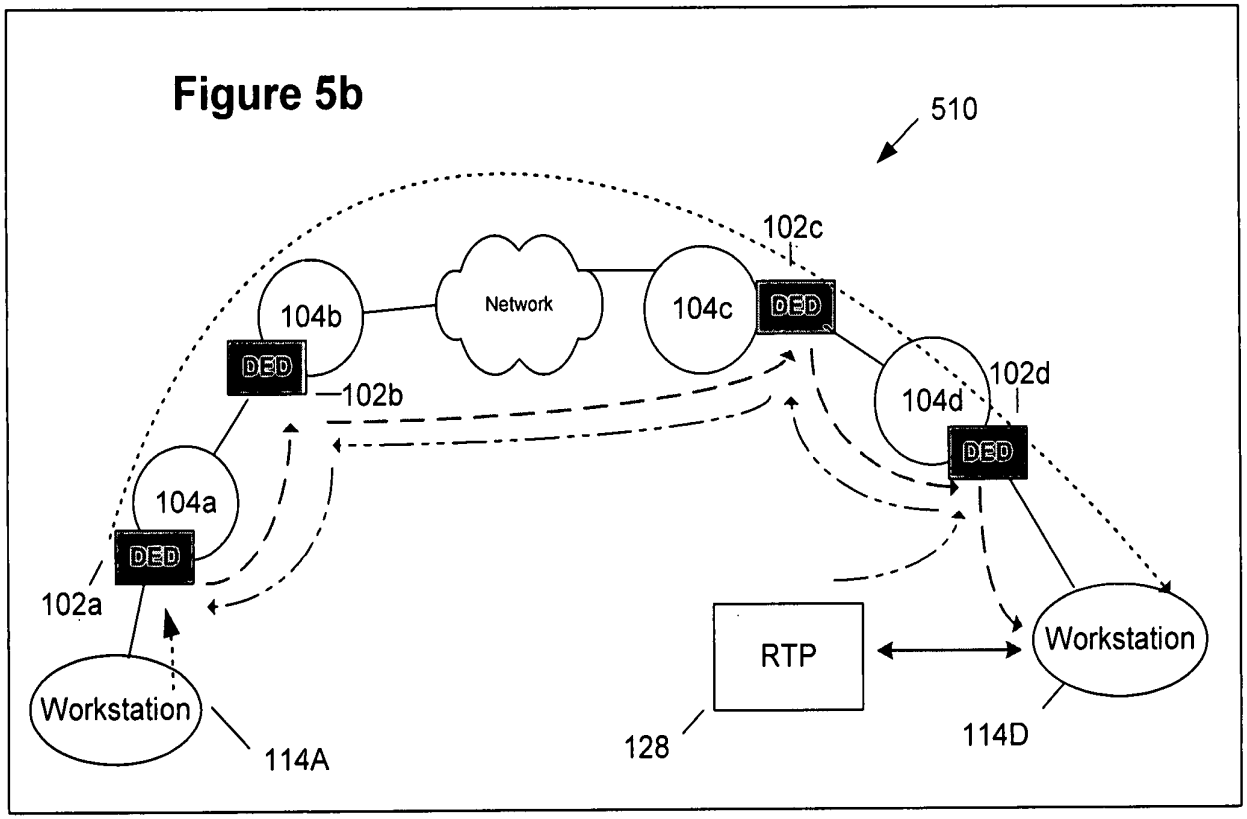

500
NAP - Network Access Point
Workstations
Data Enabling Device
104
102
NAP 3
104
102
NAP 2
NAP 1
104
102
104
Company X
102
Campus A
Campus B
Campus C
NAP 1 St. Louis
104
NAP 1 Chicago
102
104
102
Dept A
Dept C
Dept B
Dept A
Dept B
114
114
114
114
114
114

Figure 5b



Identified Content ·····→

Message — — — →

Release_Content —·-·— →
or
Cease_Content

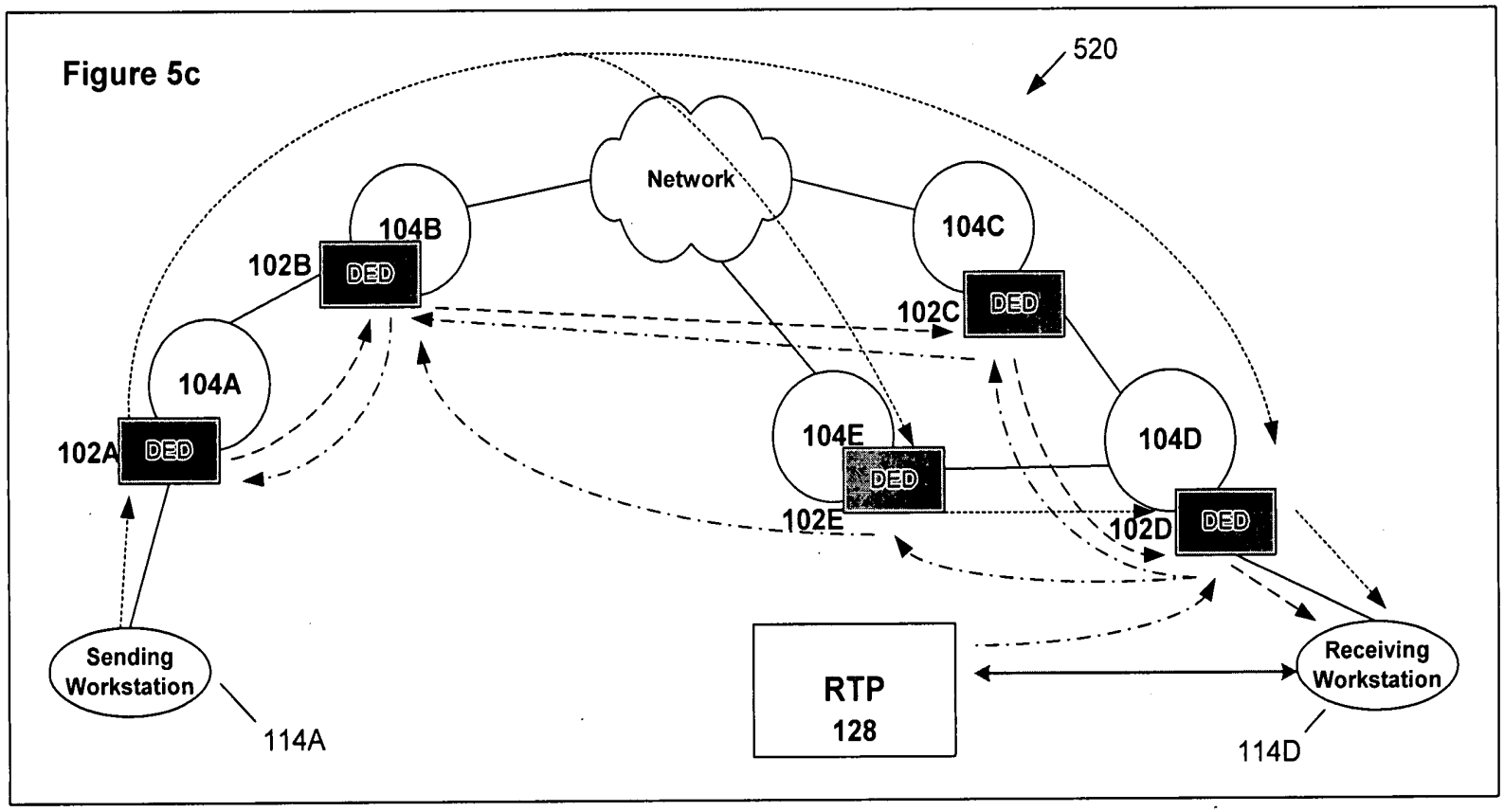
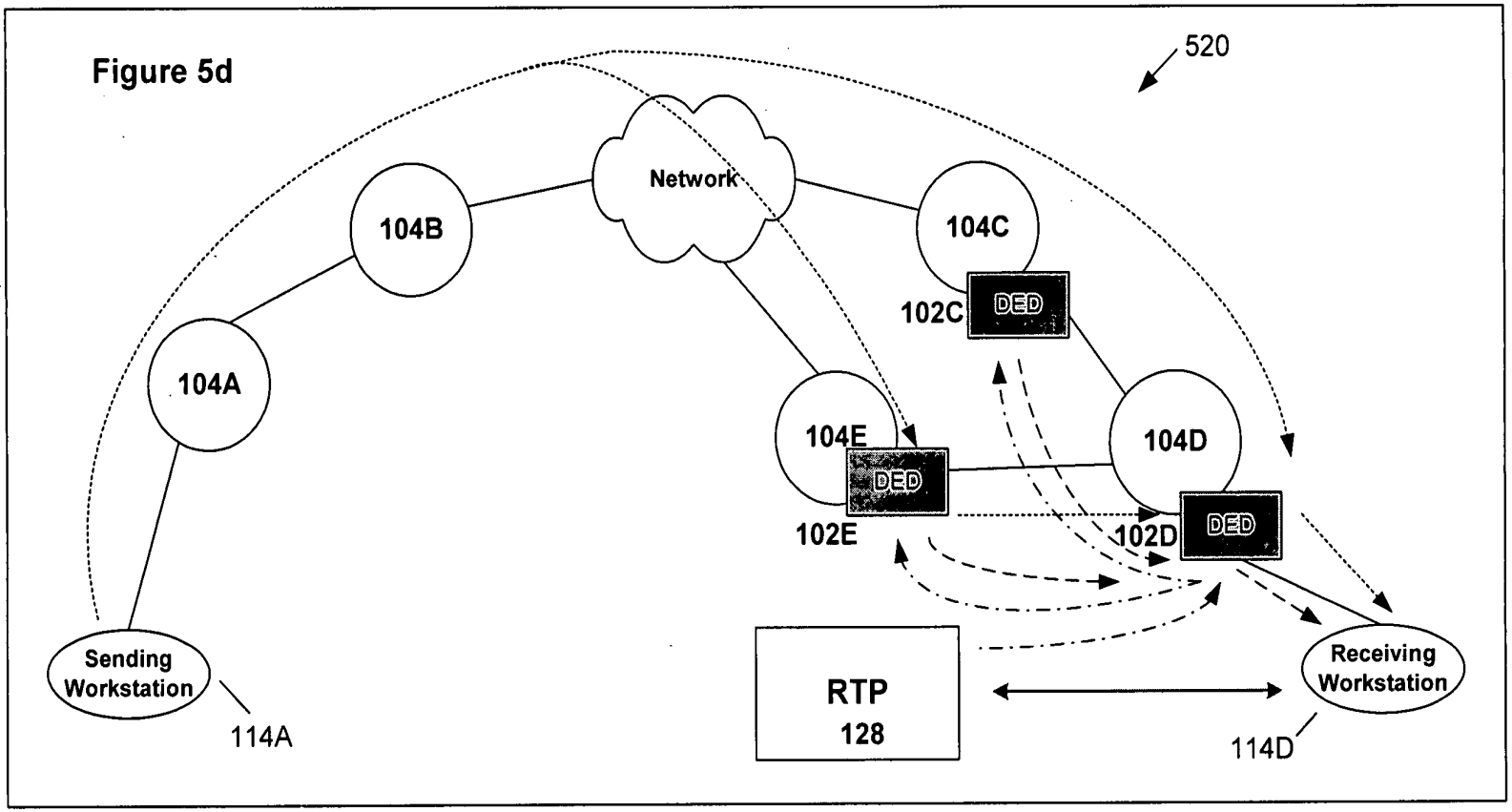


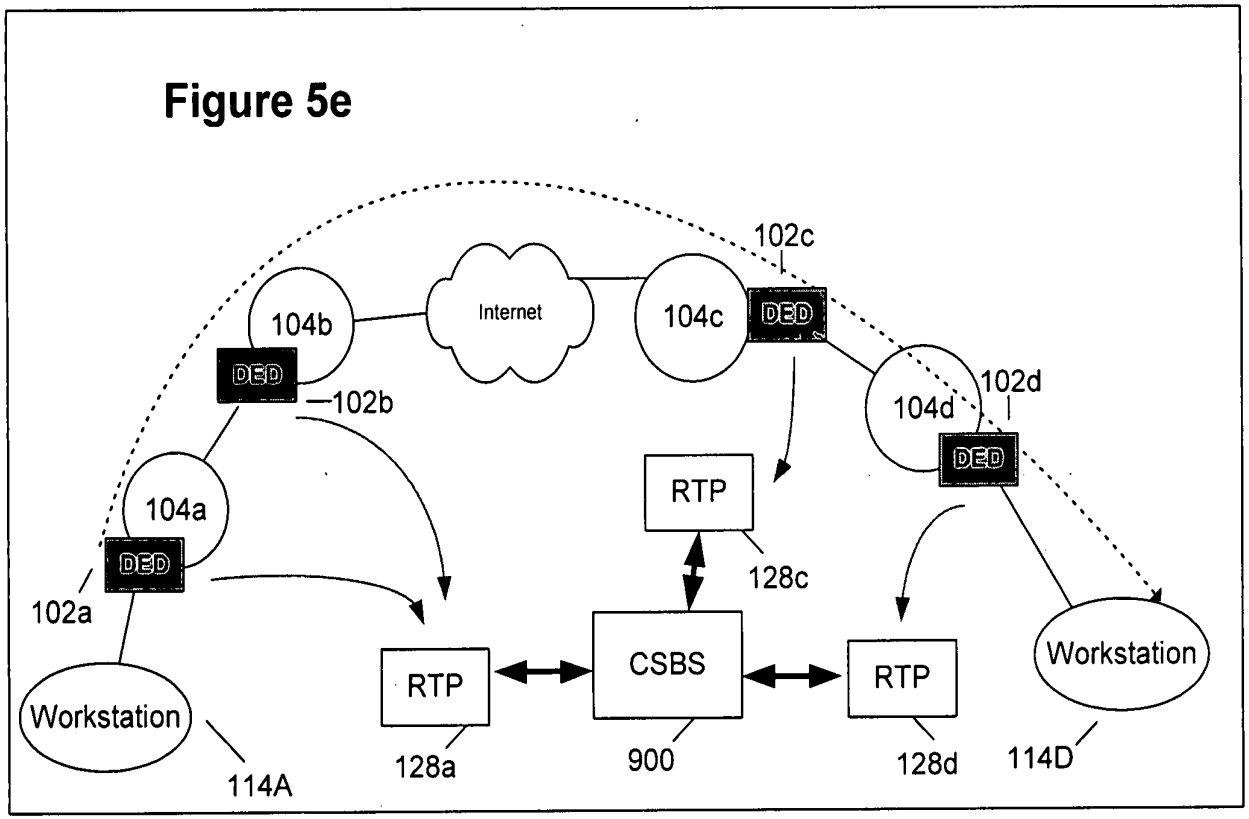
Figure 5c
520
Network
104A
104B
104C
104D
104E
102A
102B
102C
102D
102E
DED
Sending Workstation
114A
RTP
128
Receiving Workstation
114D
Identified Content
Message
Release_Content or Cease_Content

Figure 5d



Identified Content
Message
Release_Content or Cease_Content

Figure 5e



Identified Content ·····→

Database Update ——→

Figure 6a

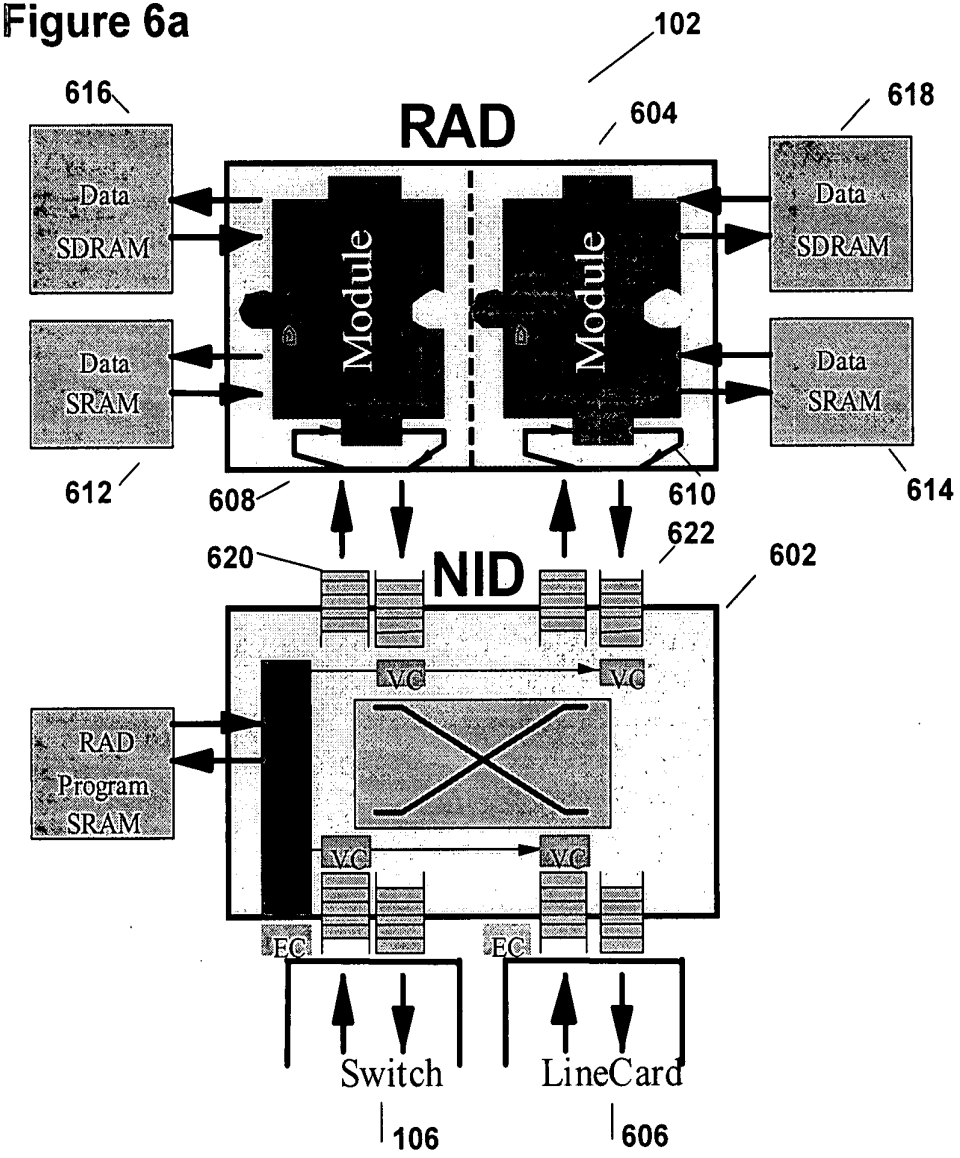

102
RAD
604
616
618
Data SDRAM
Data SDRAM
Module
Module
Data SRAM
Data SRAM
612
608
610
614
620
622
NID
602
V.C
V.C
RAD Program SRAM
V.C
V.C
EC
EC
Switch
LineCard
106
606

Figure 6b

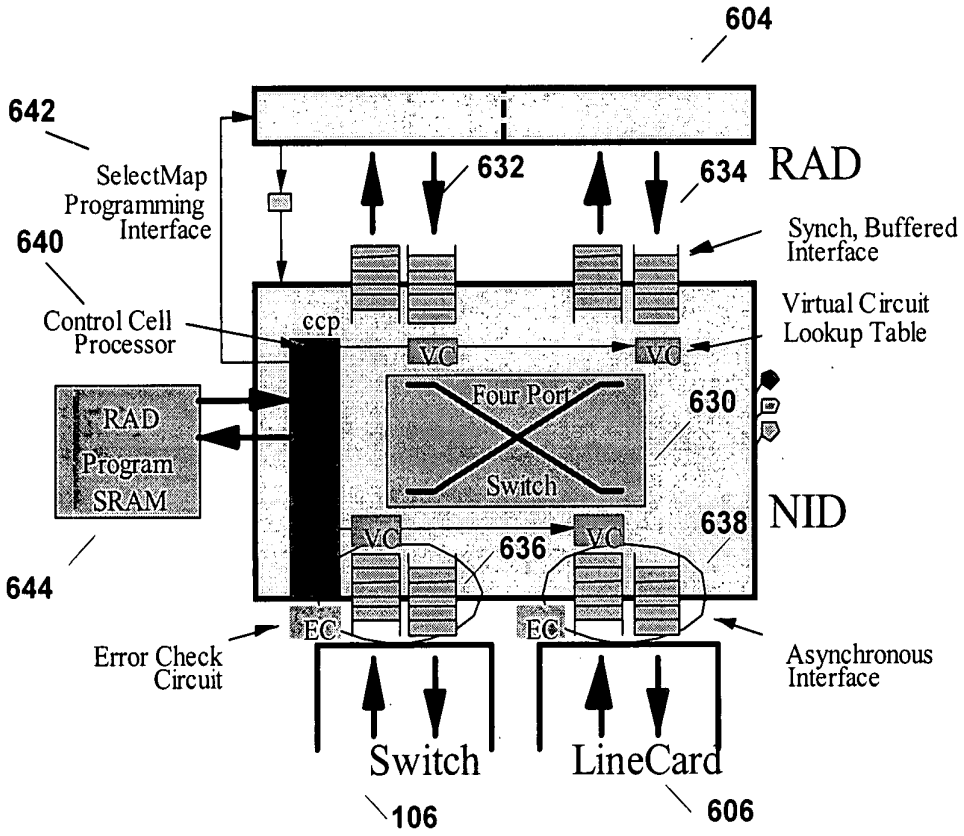

604
642
SelectMap
Programming
Interface
632
634
RAD
640
Synch, Buffered
Interface
Control Cell
Processor
ccp
Virtual Circuit
Lookup Table
VC
VC
RAD
Program
SRAM
Four Port
Switch
630
NID
638
VC
636
VC
644
EC
EC
Error Check
Circuit
Asynchronous
Interface
Switch
106
LineCard
606

Figure 7

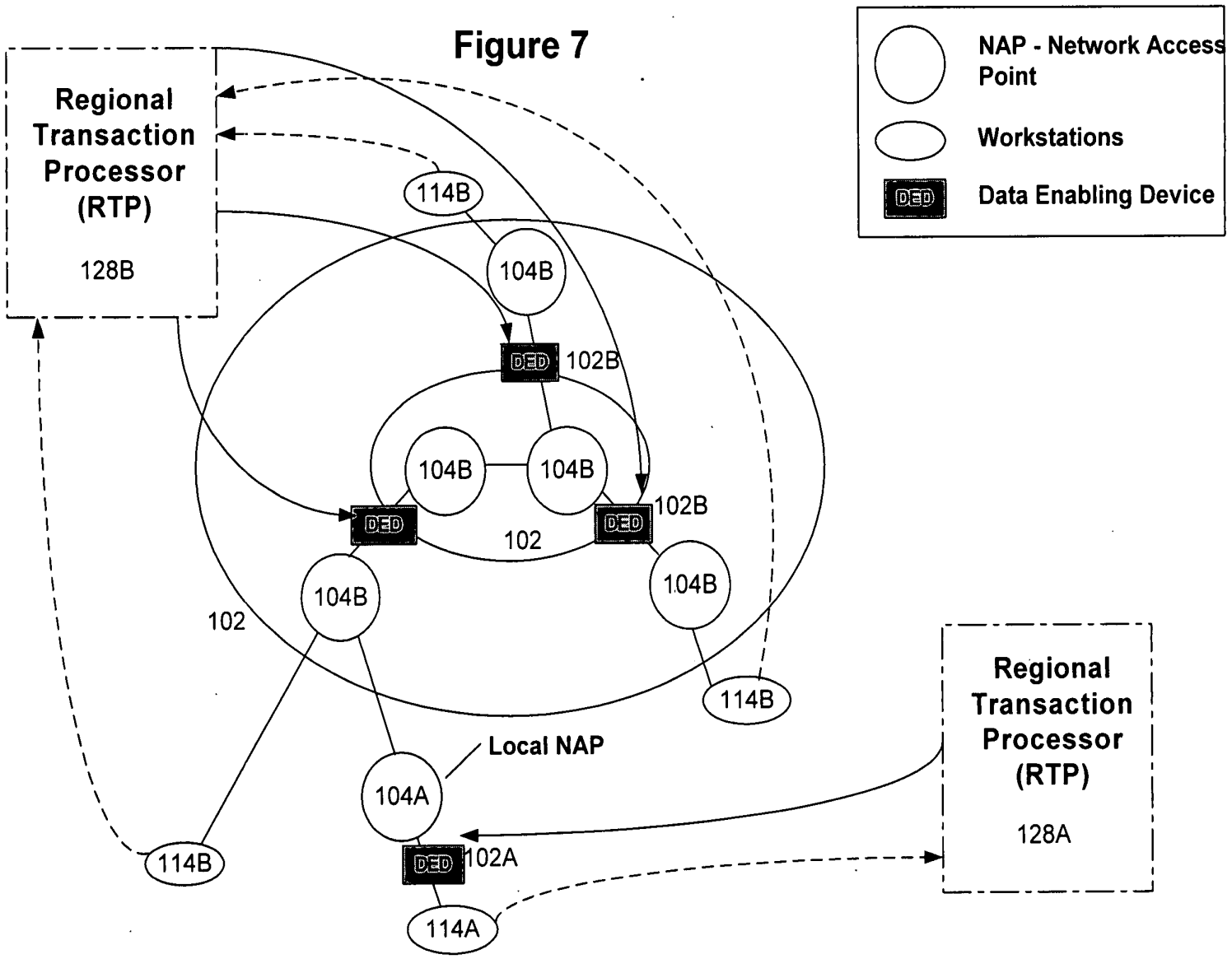

Regional Transaction Processor (RTP)
128B
114B
104B
DED
102B
104B
104B
DED
102B
102
DED
104B
104B
102
114B
Local NAP
104A
114B
DED
102A
114A
Regional Transaction Processor (RTP)
128A
NAP - Network Access Point
Workstations
Data Enabling Device

Figure 8a

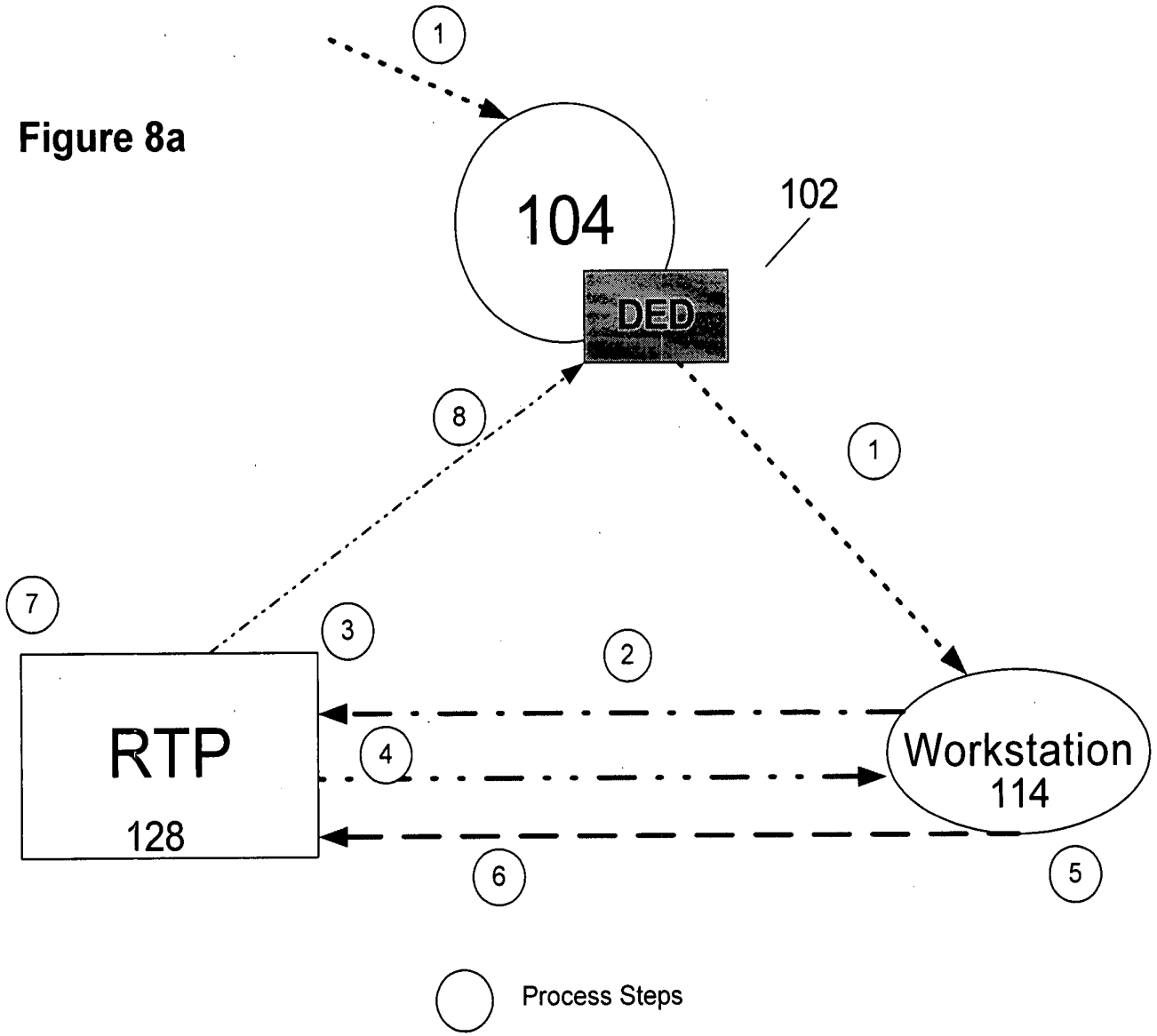

1
104
102
DED
8
1
7
3
2
RTP
128
4
Workstation
114
6
5
Process Steps

Figure 8b

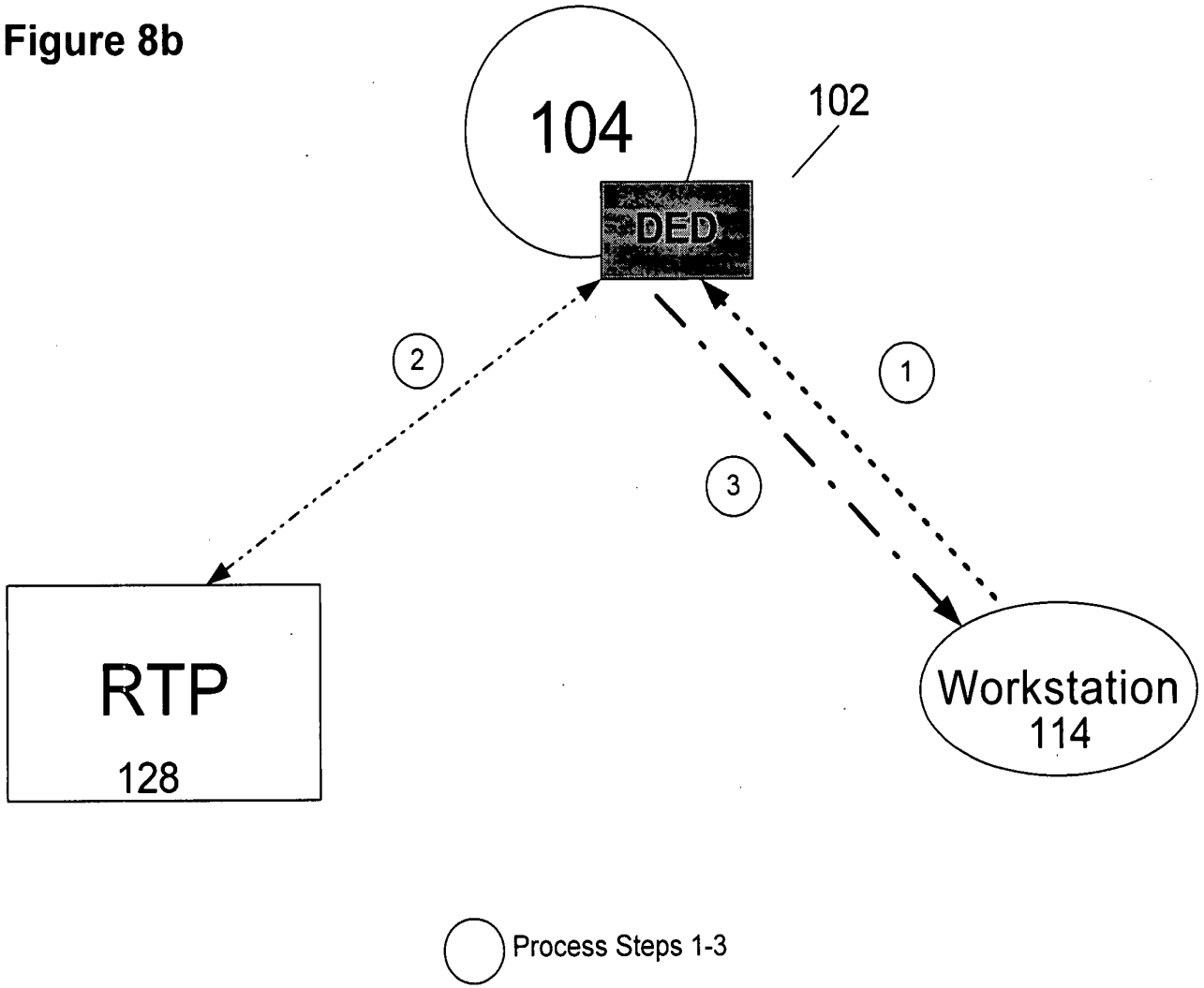


Figure 8c

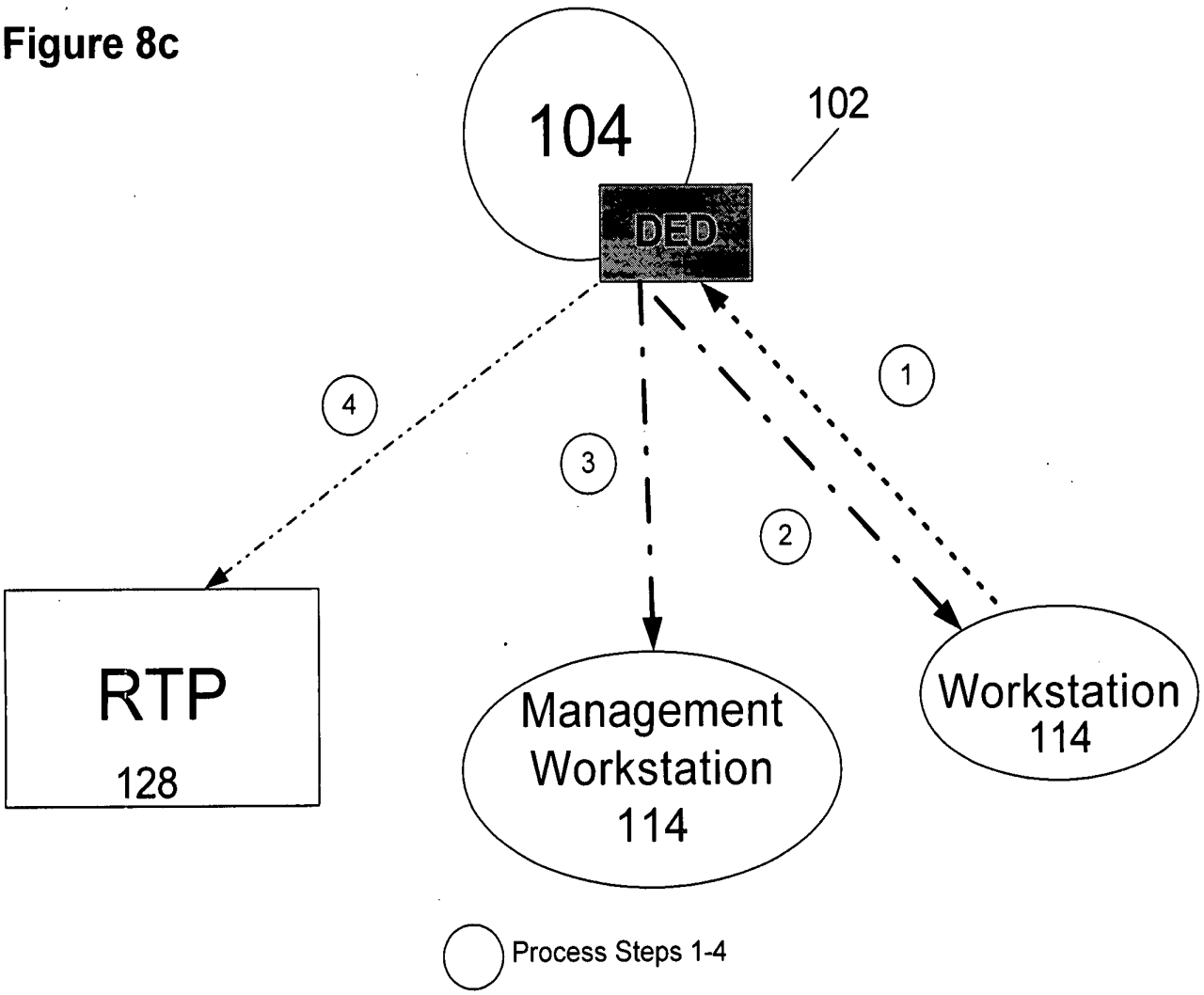

104
102
DED
1
2
3
4
RTP
128
Management
Workstation
114
Workstation
114
Process Steps 1-4

Figure 8d

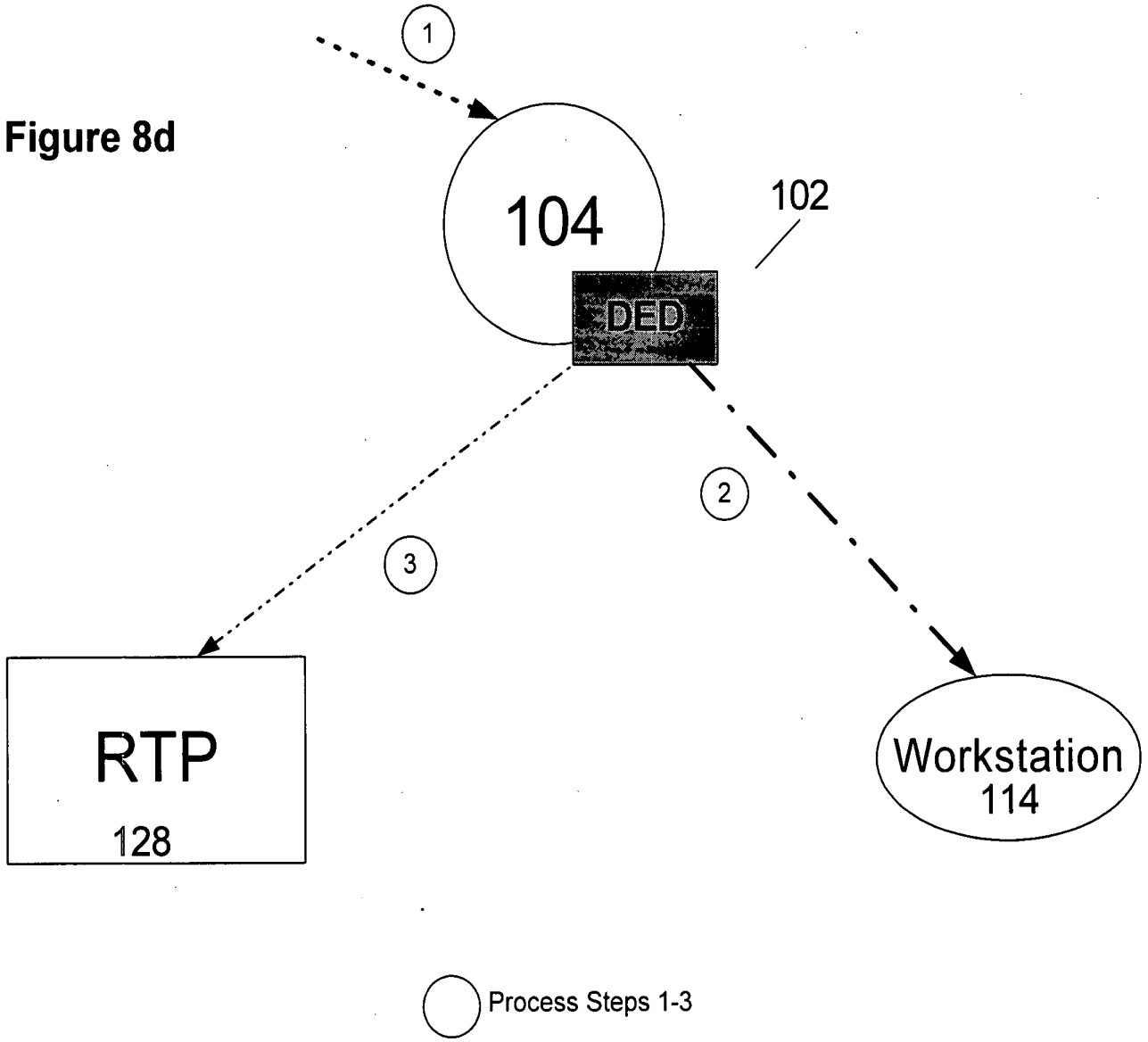


Figure 8e

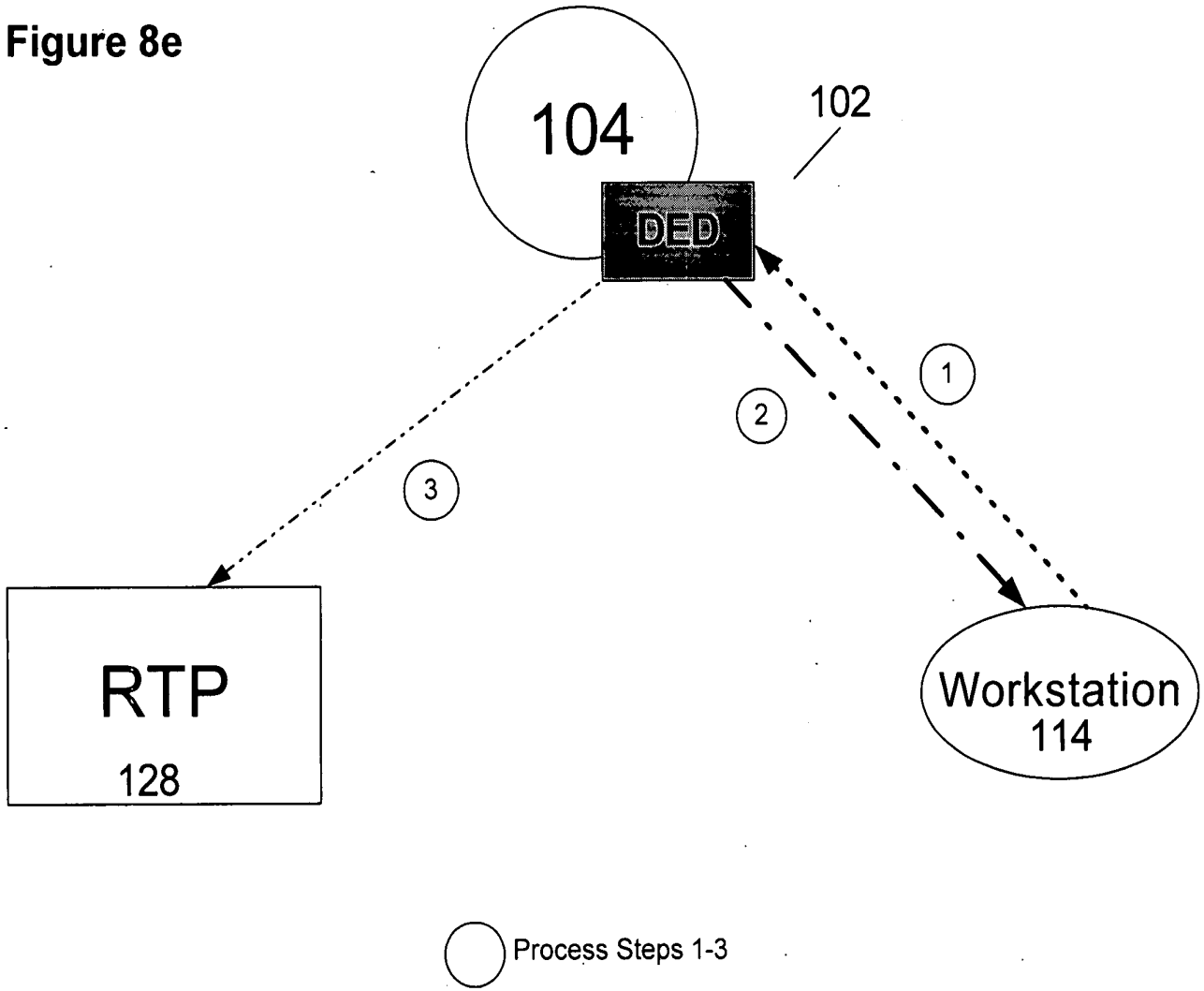


Figure 9

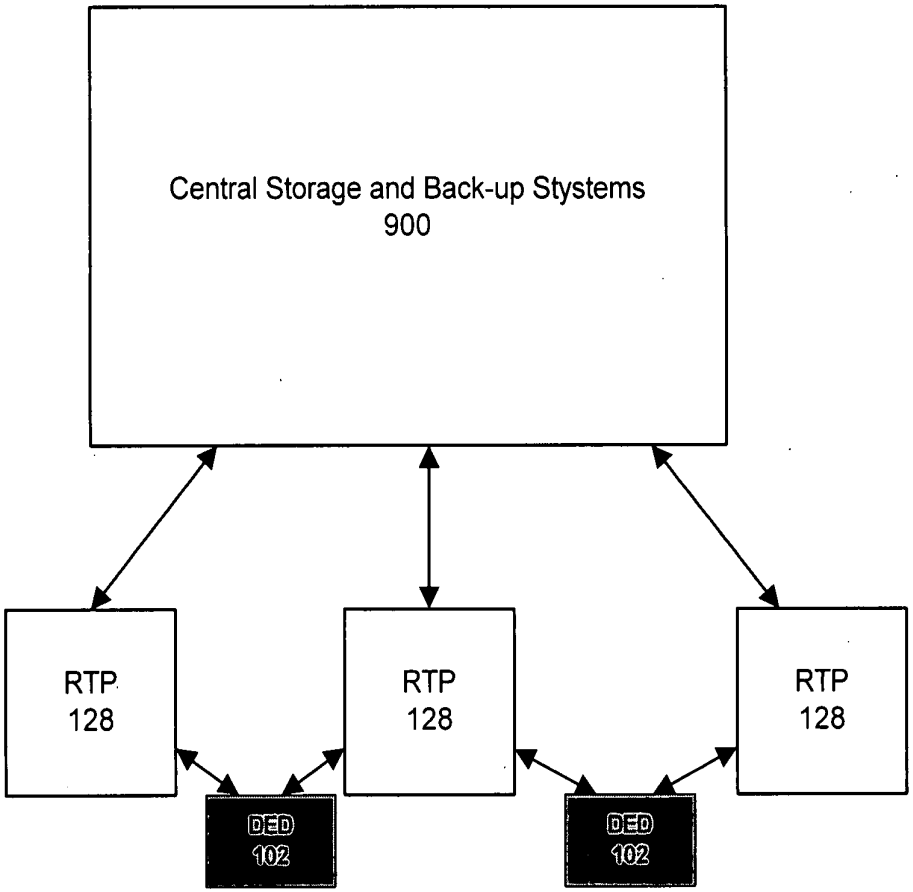

Central Storage and Back-up Stystems
900
RTP
128
RTP
128
RTP
128
DED
102
DED
102

Figure 10

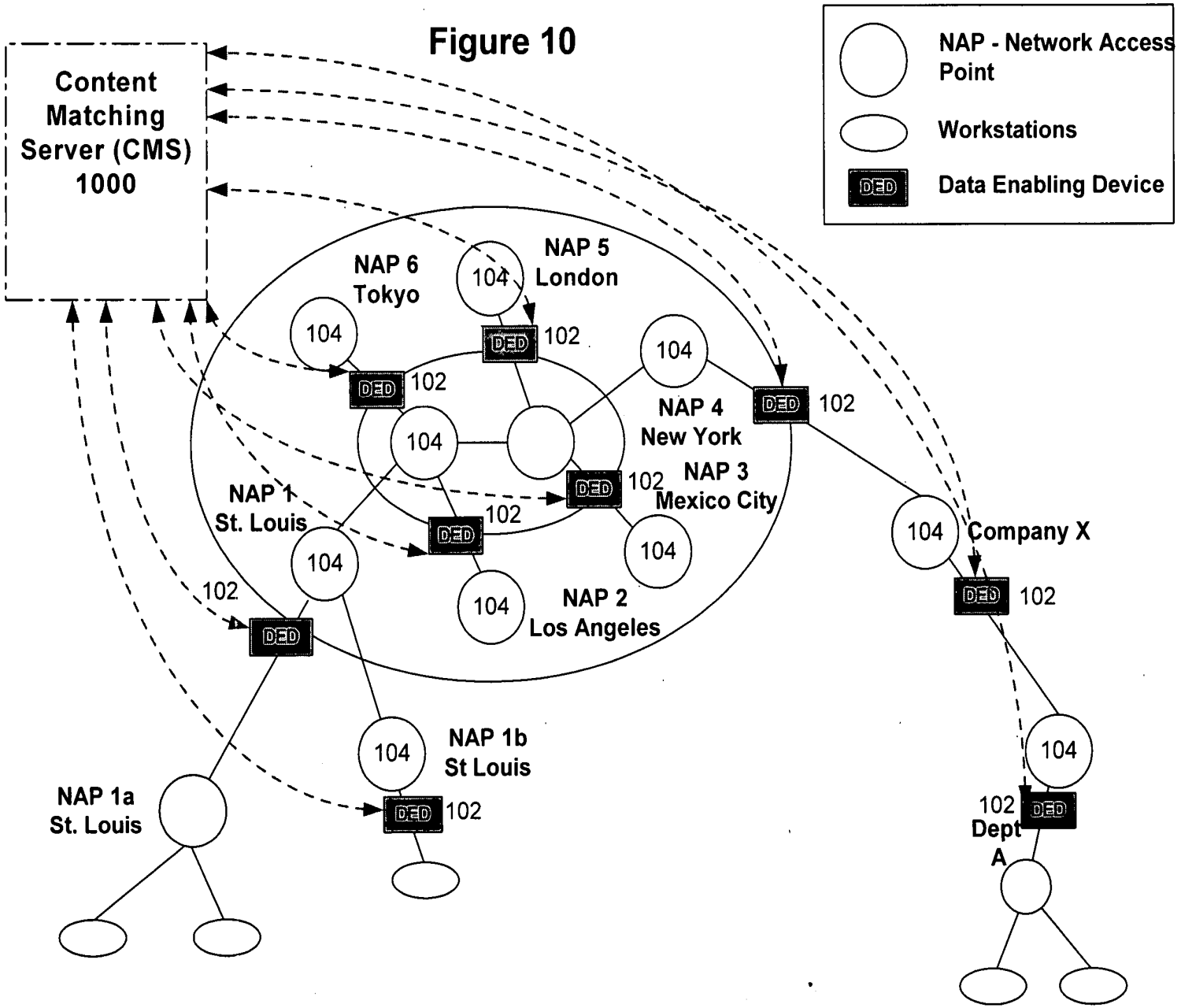
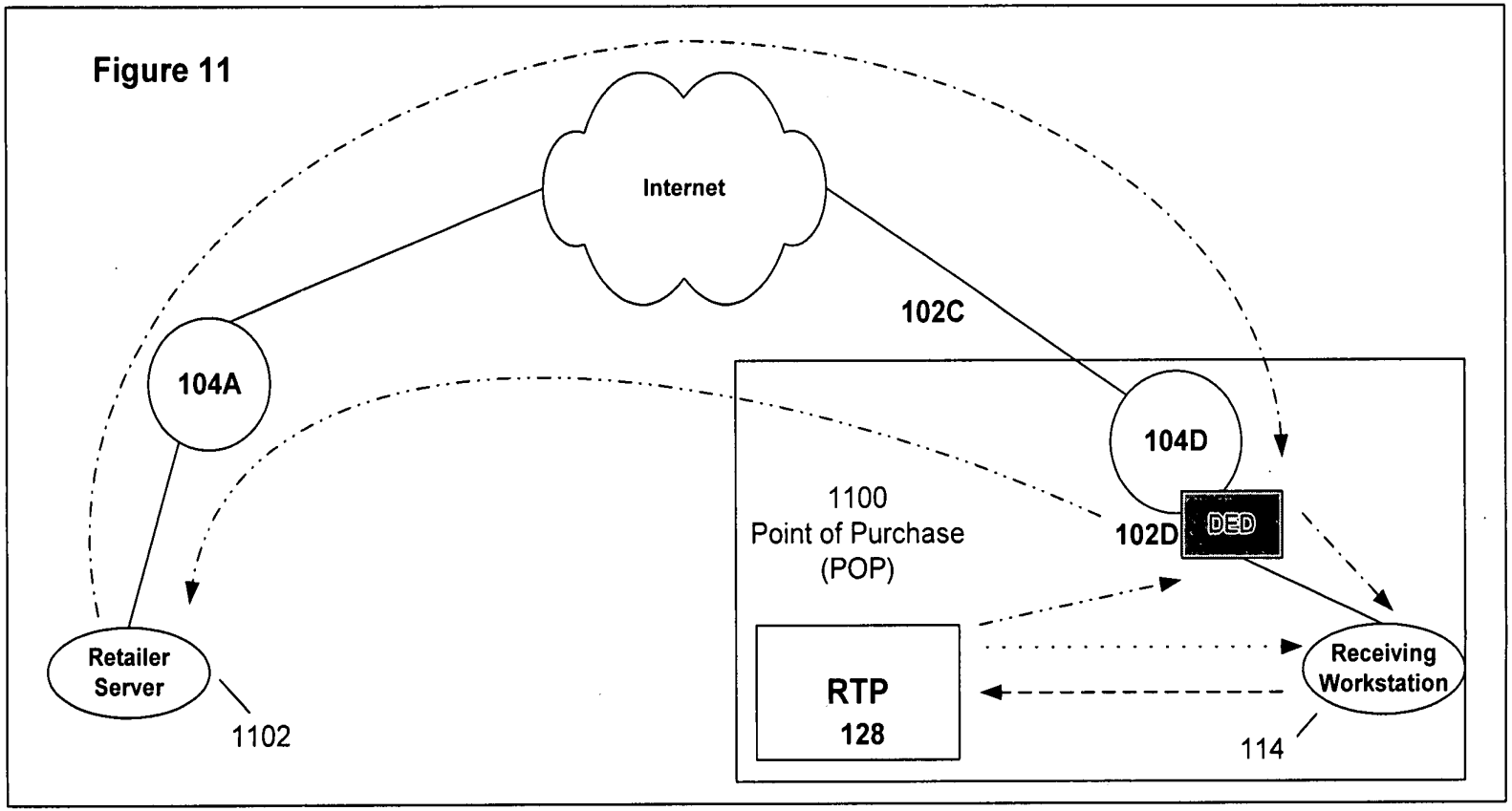

Content Matching Server (CMS) 1000
NAP - Network Access Point
Workstations
DED
Data Enabling Device
NAP 6 Tokyo
NAP 5 London
NAP 4 New York
NAP 3 Mexico City
NAP 2 Los Angeles
NAP 1 St. Louis
NAP 1a St. Louis
NAP 1b St Louis
Company X
Dept A
104
102

Figure 11


Internet
102C
104A
104D
1100
Point of Purchase
(POP)
102D
DED
Retailer
Server
1102
RTP
128
Receiving
Workstation
114
Purchase Message
RTP_Prompt
Workstation Prompt
Order Confirmation